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Wausau Mill Resumes Capacity Production

Reconstruction of Wausau Paper Mill Damaged By Flood Last Summer Completed and Plant Now Operating At Capacity—More Workers Added By Wisconsin Paper Mills — Industrial News.

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., January 5, 1942—Operations at the Wausau Paper Mills Company, Brokaw, Wis., were back at capacity Friday, December 26, when No. 1 machine went into production after being idle since August 31. Reconstruction had been in progress in the meantime from partial destruction of the machine room by flood waters of the Wisconsin River.

The 110-inch Fourdrinier is turning out 25 tons daily, increasing the company's output of bonds, ledgers, mimeographs and specialties by one third.

It was necessary to rebuild the footings, foundations and south half of the west wall of the machine room before the machine could be put in operation. The work was done by C. R. Meyer & Sons Construction Company of Oshkosh, Wis., and the remaining repairs and renovation will take several months.

The company's dam and generating plant were also wrecked by the floods, but attention was concentrated on restoration of the machine room. No immediate plans have been made for reconstructing the dam. Commercial power is being purchased to operate the mills for the time being.

More Workers Added to Payrolls

Wisconsin paper mills and allied industries added 100 workers during the month of November, according to reports of the Wisconsin Indsutrial Commission. The number on the payrolls was 24,200, as compared with 24,100 in October, and 21,900 in November a year ago. This was an increase of 0.3 per cent for the month, and 10.6 over a year ago. There was practically no change in the container and converting plants of the Milwaukee metropolitan area, where 2,215 workers are employed in 19 plants.

Weekly payrolls took a spurt of 1.1% in November over October, with $765,000 going to the workers, as compared with $756,000 the previous month. Total payrolls per week are up 32.1% from November of 1940.

The average hourly rate of 72.1 cents is the highest ever paid, with workers averaging $31.60 per week for an average of 43.8 hours worked. In the Milwaukee metropolitan area, earnings average 67.7 cents per hour, of $29.13 for a 43-hour week.

Paper Mill Subsidiary Buys Forest Lands

Forest lands totalling 26,160 acres in Upper Michigan have been purchased by the Bonifas Lumber Company, a wholly owned subsidiary of the Kimberly-Clark Corporation, Neenah, Wis. The acreage was obtained at auctions conducted by the Michigan Department of Conservation, and the price paid was $36,710.50. It is announced that the purchasers intend to use the land for reforestation work. The state disposed of a total of 40,440 acres, with Bonifas the major buyer.

Paper Men to Discuss Conservation

Paper and pulp mill executives will soon be called to a conference at Madison, Wis., by the Wisconsin Conservation Commission to formulate policies which will prevent waste and indiscriminate cutting of timber. W. J. Aberg, chairman, said all wood using industries would be asked to attend. He pointed out that wood and pulp prices have increased to such an extent that there is now under way a tremendous and dangerous harvest of some of the finest second growth forests in the north country. While there are no laws governing the cutting of timber on private property, the commission hopes to prevent a repetition of the war exploitation which caused serious problems in the wooded regions. Mr. Aberg believes conservation methods can be agreed upon which will prevent the enactment of harsh restrictive legislation.

Draft Appleton Plan for OPM

A draft of the Appleton Plan of Recovery of Waste Paper, devised at Appleton, Wis., for national use, is being sent to the conservation division of the Office of Production Management in Washington. Its details will be transmitted to various communities for the salvage campaign to help overcome the shortage of pulp.

Curtis T. Flieman, manager of the Plan, announced that 100,630 pounds of waste paper were collected

(Continued on page 23)

Midwest Papermen Optimistic of Future

General Paper Merchants Believe Current Year Will Prove Prosperous Period—State Defense Council Gives Information On Waste Paper — Paper Stock Concern Criticized — Other Late News.

[FROM OUR REGULAR CORRESPONDENT]

CHICAGO, Ill., January 5, 1942—The paper industry begins the New Year with bright prospects considering the abnormal conditions which surround all industry. Local paper trade executives believe that 1942 will be a year of prosperity for the trade as requirements of the Government for war purposes are geared to a point where consumer needs may be fitted in in more workmanlike fashion. It is indicated here that the mills are finding it possible to catch up a little bit though the kraft and board mills are still experiencing plenty of trouble even approximating demand. Groundwoods, books covers, newsprints and other lines have found buyers a bit less excited about the future and somewhat more confident that there will be paper even if that paper may not be the exact grade hitherto used.

The market, itself, expects to continue into 1942 its policy of voluntary regulation and the Chicago industry prides itself on the way in which it has worked with the OPA in the matter of ceilings. Meanwhile considerable interest in the February "war policy" meetings of the National Paper Trade Association is being evidenced locally and more than the usual number of local executives are expected to be in New York for the sessions beginning February 16.

Gives Information on Waste Paper Collections

The Illinois State Defense Council last week finally answered the problem which is reported to have been vexing those thousands of Illinoisans who are anxious to save waste paper as a contribution to America's defense. The advice was "dispose of it through the regular channels of trade or through the collecting agencies of authorized charities." It has been suggested that housewives save their paper until they have amassed at least 100 pounds. Chicago has five well known charitable groups known as the "big five" which collect waste paper. "Not only does the paper they accumulate get to national defense uses as quickly as that sold to the junk dealers," says one local authority, "but it also gives employment to more than 500 unemployed or handicapped men. W. C. Loague, Superintendent of Goodwill Industries, has suggested that housewives might help the charities by segregating their paper. Thus, scrap paper should be put into a large carton, newspapers stacked in a pile or tied together and magazines placed in a separate pile. Books and used cartons are also reported as highly acceptable. The regional office of OPA has been bombarded with questions as to what "shall we do with our paper". No official order has as yet been issued but the Defense Council urges civilian consumers to conserve all surplus materials and dispose of waste paper through the two channels accepted at present—charity or waste paper dealers.

Wide local circulation has been given to Leon Henderson's statement that "there is no longer such a thing as junk . . . A pile of newspapers is a potential cardboard carton to carry weapons and ammunition to their destination. Every waste paper transaction between a housewife and her waste dealer means that much more fighting equipment arriving at the proper place at the proper time."

Safety Council Plans "War" Program

The Greater Chicago Safety Council has announced that it will hold its 20th annual Midwest Safety Conference on May 5, 6 and 7 at the Sherman Hotel in Chicago. Committees have already been appointed and will hold their first meeting this week. Announcement of the conference, which has always attracted a great deal of interest among the paper and allied producers in this area including Wisconsin and Michigan, was made by B. M. Livezey, general chairman of the Midwest Safety Conference. In announcing the Conference Mr. Livezey said "The importance of accident prevention work in the plants, on the streets, in the homes and throughout the community has never been of greater moment than at the present time when the conservation of man power is of primary importance in our country's war efforts. We, therefore, anticipate that our Conference in May will be of greater significance than any of its nineteen predecessors. We have been very fortunate over the years in having the whole-hearted cooperation of literally scores of organizations in the sponsorship of this Conference. It is a great community enterprise in which all of us have a part to play." Mr. Livezey is general superintendent of the South Works of the Carnegie-Illinois Steel Corporation.

Local Waste Dealer Criticized

Officials of the Thomas Paper Stock Company, well known Chicago waste paper dealers, have been accused of "impairing the country's war efforts in order to gain personal profits." The charge was made by Leon Henderson, head of the Office of Price Administration and denied by A. E. Sahdroff, head of the Thomas Paper Stock Company who is quoted as saying he "thought Mr. Henderson misunderstood the situation and that the company had not been allowed a chance to explain the facts in the case." Mr. Henderson charged that the Chicago concern had "repeatedly and flagrantly violated wastepaper price ceilings and added that wastepaper is a vital raw material because of its need in making paperboard which is indispensable for packing war materials." He added that "persistent failure of the company to observe price schedules was disturbing to the entire Chicago waste paper trade."

Salesmen Plan for N.P.T.A. Meetings

The western division of the Salesmens Association of the Paper Industry dispensed with its Monday, December 29 meeting, content in the belief that the annual Christmas party of a week before would hold everybody together until Monday, January 5, when regular noon sessions at the Hotel Sherman will be resumed.

Protection of Forests Called Vital Task

Former Chairman of Woodlands Section of Canadian Pulp and Paper Association Tells Quebec Forestry Engineers Preservation of Timber Lands Is Essential War Reserve — Other Industrial News.

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., January 5, 1942—Ellwood Wilson, former chairman of the Woodlands Section of the Canadian Pulp and Paper Association told delegates at the Quebec Forestry Engineers Association Convention in Quebec City that the most important task which faces Canada today is the protection and preservation of our forests.

"Our export of forest products," Mr. Wilson said, "is the most important source of foreign exchange, so vital to our national economy. The proper management and improvement of our forests will furnish healthy outdoor employment to a very large number of men returning to civil life who will find it very difficult to find jobs after the war . . . "

A message from L. S. Webb, president of the Canadian Society of Forestry Engineers, said, "the necessity for greater efforts on the part of the governments, the forest industries and the public in the proper use of the forest resources of Canada has become evident during the last year . . .

"The emergencies caused by the war," the message continued, "have continued to increase the demand for forest products both at home and in the countries of our allies. Canada has met that emergency through a greatly increased production. Forest products are so vital to our war effort that the forest industry may well be considered one of the vital war industries . . . "

R. Bellefeuille of Quebec was re-elected to the presidency of the Association for the ensuing year, while W. L. Bubie was chosen as vice-president. Others elected to the board were L. Z. Rousseau, Omer Luissier, Edgar Porter and W. A. E. Pepler.

Price Bros. to Erect Addition

Price Bros. & Co. has awarded a general contract to Foundation Company of Canada for a new story addition to its mills at Kenogami, estimated to cost close to $160,000 with equipment. Work is scheduled to be placed under way at once.

Expects Heavy Paper Demand This Year

Harold Crabtree, president of the Howard Smith Paper Mills, asked for his opinion on the outlook for the fine and coarse paper business for 1942, said: "The outlook is very difficult to judge, on account of the many uncertain factors with which the industry will be faced. The demand for both grades is expected to be very heavy and will undoubtedly tax the production capacity of the industry. The restrictions which the government has been forced to place on the use of certain essential raw materials and chemicals that are widely used in our business are bound to create manufacturing problems.

"These, and the fining of prices are factors which it is impossible for the industry to appraise at the present time. There is also the question of the available of skilled labor to meet the demand of our business.

"We can but express the hope that, notwithstanding these obstacles it may be possible to operate our mills on a basis where the demand for war and civilian needs may be well taken care of."

The present capacity of the mill is: Mill wrappers and wood board, 80,000 lbs. per 24 hours; newsprint, 1,300,000 lbs.; ground wood, 1,154,000 lbs.; sulphite fibre, 316,400 lbs.

Sawdust Recommended for Home Heating

For Canadians in regions contiguous to sawmills, the use of sawdust for home heating is recommended as a war measure by the Forest Products Laboratories of the Federal Department of Mines and Resources. It is estimated that after allowing for sawdust used as fuel to provide power and for other purposes, the quantity still available is likely to be not less than 100,000,000 cubic feet a year.

For home-heating purposes sawdust is burned in an attachment fitted with little difficulty and at moderate cost to any ordinary type of domestic furnace or boiler. Other types are available for use with stoves and kitchen ranges. The attachment consists of a set of special grates and a hopper to hold a supply of sawdust. The fuel feeds by gravity on to the grates from the hopper, the whole operation of stoking and combustion being accomplished without the aid of any mechanical appliances. Two or three fillings of the hopper each day are usually sufficient, excepting in the most severe weather.

Geo. B. Beitzel Made Vice President

[FROM OUR REGULAR CORRESPONDENT]

PHILADELPHIA, Pa., January 5, 1942—Announcement has just been made of the promotion of George B. Beitzel from manager of sales to vice president in charge of sales of the Pennsylvania Salt Manufacturing Company of this city, manufacturers of chlorine, caustic soda, ammonia, hydrogen peroxide, and other chemical products, and importers of Greenland cryolite. Their products go into paper pulp, water sanitation, laundry, dairy, poultry, metal cleaning, refrigeration, textile, ceramic and glass and many other fields.

George Beitzel's career is an example of the success which can come from hard work and steady and unflagging perseverance. He was educated in the public schools of Philadelphia and in the University of Pennsylvania. He served his country in the First World War, advancing through the ranks from private to first lieutenant. After the War he spent a number of years with John T. Lewis & Bros. Company, paint manufacturers, and twelve years ago came to the Pennsylvania Salt Manufacturing Company.

George Beitzel's high standing in the field of sales management is attested by the fact that he is now president of the Sales Managers' Association of this City.

Canadian Paper and Pulp Exports at Peak

Shipments of Newsprint and Pulp To U. S. and Overseas In 1941 Expected To Exceed Previous Year By Over 4 Million Dollars—U.S. Imports of Chemical Pulp Up 24 Per Cent—Other Mill News.

[FROM OUR REGULAR CORRESPONDENT]

TORONTO, Ont., January 5, 1942—The year 1941 has been an exceptional one for the Canadian pulp and paper industry. Not only has there been a sharp rise in domestic demand, but the majority of the democratic countries of the world have come to depend upon Canada for all or part of their pulp and paper supplies.

The increased demand has not only been for newsprint, but for the numerous other pulp and paper products produced in Canada.

While the final figures for the past year are not yet available, exports are expected to show an aggregate trade of around $260 millions, as compared with $231.8 millions in 1940, making 1941 one of the biggest years in the history of the industry in this country, both in respect to dollar value and tonnage.

The demand for woodpulp, insulating board and kraft papers has been particularly heavy. It is estimated that newsprint alone will bring about $155 millions, insulating board around $10 millions, woodpulp about $80 millions and other products approximately $15 millions.

This jump of around $24 millions in exports of newsprint is accounted for by increased shipments to the United States, Argentina, Brazil, Chile, Peru, Mexico, and some other markets. Considerable tonnage went to Australia, New Zealand, the United Kingdom, British India and other parts of the commonwealth.

Demand for Canadian Newsprint Heavy

As a matter of fact, since the war has cut off supplies from the Scandinavian countries, almost every newsprint consuming country in the world, outside of those controlled by the Axis group, and the United States, is depending largely upon Canadian sources of supplies. This market is shared, of course, by Newfoundland, which, with Canada, is supplying nearly 70% of the market in the United States as well.

This country has also profited considerably from the misfortunes of others. One of the most remarkable changes which occurred in the operations of the Canadian pulp and paper industry since the beginning of the war has been the extraordinarily strong demand for insulating and building boards. This demand has come from both the domestic and export divisions. In the domestic field, wallboard has been used in large quantities for temporary structures in military camps. In the export field, there has been no let-up in the use of board for camps and temporary shelters for the civilians blasted from their dwellings.

Figures on the volume of shipments, either domestic or for export, are not available, as they have not been given out for some time, but the value of export shipments for 1941, which is given as around $10 millions, gives some idea of the extent of this entirely new business.

Canadian pulp has also enjoyed an exceptional demand, particularly with the United States. For the first nine months of 1941 that country imported from Canada 24% more pulp tonnage than was the case in 1940 in a similar period. This increase was mostly in the chemical grades of pulp.

The greatly increased scale of operations in the fine paper and other paper making mills in Canada has called for a larger tonnage of pulp. There has also been a strong demand for nitrating pulps for use in making nitro-cellulose for explosives. Canadian mills have also been shipping large quantities of pulp to the United Kingdom for further processing.

Fine papers and kraft papers have been enjoying greater activity because of the greatly accelerated tempo of business generally and government business in particular. Enormous quantites of paper have been used for printed forms in connection with government work, public loans, control boards, the armed services and campaigns of one kind and another. In fact, the demand has been so great that manufacturers of fine papers have had to put in force a modified form of rationing on their own account to ensure sufficient paper to take care of all demands, especially those from other parts of the empire.

Nine-Point Paper an Important Guide

Any review of the pulp and paper business for 1941 must take special note of that other important new development, the making of what has come to be best known as "nine-point" paper by the newsprint companies as a kraft substitute. Indicative of the value of this new development to the industry is the effect it is having on the earnings ratios of the newsprint companies. As an example, the net per ton of Abitibi Power and Paper Co. in November was higher than in recent previous months. Shipments of newsprint, which includes substitute products, were 49,607 tons in November, or 1,882 tons lower than October, while shipments of bleached sulphite pulp were off 122 tons at 8,313 tons. In the face of this decline of 2,004 tons in total shipments, an improvement in net profit per ton occurred from $19.17 to $19.24.

"Nine-point" paper sells at a substantially higher level than newsprint and increased percentages of Abitibi's newsprint capacity have been switched to the production of substitutes. Just what price is obtained for the "nine-point" has not been divulged, but it has been reported to be $60 a ton, as against the $50 a ton for newsprint during the period under review.

For the first 11 months of 1941, Abitibi's average profit per ton was $17.44, as compared with an average profit of $15.51 for the corresponding period of 1940, on an improvement in total tonnage of 38,183. Profits per ton in February, 1941, were $14.88 and the major trend was decidedly upward to $19.24 in November.

The advantage to the newsprint companies of making "nine-point", together with that of a $3 a ton increase for newsprint starting next April 1, stand to make for an appreciable step-up in profits of Canadian newsprint companies in the year just begun.

LIFE RENEWS ITSELF

FROM YEAR TO YEAR!

1858-1942

Four score and four New Years have entered the mills where Hamilton Felts are made. Each year has added something valuable to the knowledge, the experience and the skill of those who labor here. Great is our heritage in 1942.

We welcome this New Year as a renewal of our youth. We welcome the young men who are entering upon their careers as paper technicians — the new ideas, fresh enthusiasms and brave confidence they bring to the industry. We welcome, too, this opportunity to acquaint them with Hamilton Felts, our contribution to the art of making better paper.

• *From the thinnest tissue to the heaviest board there is a Hamilton Felt that will do your work better, faster and at lower cost.* •

SHULER & BENNINGHOFEN, HAMILTON, OHIO

• Miami Woolen Mills •

Hamilton Felts

• Established 1858 •

Production of Wood Pulp and Consumption of Pulpwood in 1940

This report is one of a series of annual reports on wood pulp production and pulpwood consumption in the United States.

The questionnaires used in making the canvass for 1938 carried the following note: "Where pulp is consumed at mill and not sold, please state production cost or price charged to paper plant." The questionnaires used for the odd-numbered (Biennial-census) years and 1940, directed the manufacturers to report the estimated market value, f.o.b. mill. The value figures given for 1938 in Tables I and III are not, therefore, strictly comparable for all items.

TABLE I.—WOOD-PULP PRODUCTION, BY QUANTITY AND VALUE, BY PROCESS FOR THE UNITED STATES: 1940, 1939, AND 1938

[The value figures for 1938 are not strictly comparable with all items for later years (see second paragraph of text, p. 8)]

	1940		1939		1938	
	Short tons	Value (f.o.b. mill)	Short tons	Value (f.o.b. mill)	Short tons	Value (f.o.b. mill)
Wood pulp, aggregate	8,851,740	$295,524,079	6,993,334	$209,061,107	5,933,560	$180,394,204
Mechanical, total	1,762,821	32,753,955	1,444,875	27,710,170	1,333,308	24,507,924
Not steamed	1,593,317	29,884,215	1,342,643	25,379,398	1,264,544	23,273,725
Steamed	169,504	2,869,740	102,232	2,330,772	68,764	1,234,199
Sulphite fiber, total	2,591,684	128,983,210	1,946,452	86,043,861	1,606,476	78,079,147
Unbleached	990,668	38,469,853	729,203	24,736,494	601,855	21,303,522
Bleached [1]	1,601,016	90,513,357	1,217,249	61,307,367	1,004,621	56,775,625
Sulphate fiber, total	3,725,135	102,578,341	2,962,657	72,939,469	2,443,051	57,694,035
Unbleached	3,166,263	77,830,897	2,538,204	55,242,263	2,122,538	45,544,782
Bleached	558,872	24,747,444	424,453	17,697,206	320,513	12,149,253
Soda fiber, bleached and unbleached	548,047	27,939,508	[2] 441,565	[2] 19,710,156	[2] 395,307	[2] 18,062,562
Semichemical and other wood pulp	164,940	2,735,127	151,658	2,105,267	118,544	1,677,716
Screenings, mechanical and chemical [3]	59,113	533,938	46,127	552,184	36,874	372,820

[1] Includes data for "Superpurified" and "Rayon and special grades" to avoid disclosing figures for individual establishments for 1940. For 1939: "Superpurified" and "Rayon and special chemical grades," 193,420 tons, valued at $12,567,963; "Other bleached," 1,023,829 tons, valued at $48,739,404. For 1938: "Superpurified," 77,193 tons, valued at $5,650,868; "Rayon and special chemical grades," 151,068 tons, valued at $12,704,006; "Other bleached," 776,360 tons, valued at $38,420,751.

[2] "Bleached" only.

[3] Combined to avoid disclosing figures for individual establishments.

TABLE II.—PULPWOOD CONSUMPTION AND WOOD PULP PRODUCTION—QUANTITY, BY PROCESS OF MANUFACTURE, FOR THE UNITED STATES: 1940, 1939, AND 1938

	1940		1939		1938	
	Pulpwood consumption (Cords)	Wood-pulp production (Short tons)	Pulpwood consumption (Cords)	Wood-pulp production (Short tons)	Pulpwood consumption (Cords)	Wood-pulp production (Short tons)
Total	13,742,958	8,851,740	10,816,466	6,993,334	9,193,991	5,933,560
Mechanical	1,608,625	1,762,821	1,315,727	1,444,875	1,219,306	1,333,308
Sulphite	4,965,908	[1] 2,591,684	3,689,420	1,946,452	3,090,046	1,606,476
Sulphate	5,975,334	3,725,135	4,859,020	2,962,657	4,025,540	2,443,051
Soda	979,360	548,047	764,309	441,565	718,172	395,307
Semichemical and other wood pulp	213,731	164,940	187,990	151,658	140,927	118,544
Screenings, mechanical and chemical [2]	.....	59,113	.....	46,127	.....	36,874

[1] See Table I, footnote 1.

[2] Combined to avoid disclosing figures reported by individual establishments for 1940 and 1939. For 1938, mechanical, 4,215 tons; chemical, 32,659 tons.

TABLE IV.—PULPWOOD CONSUMPTION, BY QUANTITY AND COST, AND BY KIND OF WOOD: 1940, 1939, AND 1938

	1940		1939		1938	
Kind of wood	Cords	Cost	Cords	Cost	Cords	Cost
Total	13,742,958	$109,739,958	10,816,466	$84,538,835	9,193,991	$74,433,181
Yellow pine, Southern	5,013,478	27,557,380	3,834,644	20,126,230	3,261,404	17,570,346
Spruce:						
Domestic	2,045,519	24,226,288	1,567,643	18,419,481	1,447,457	17,249,767
Imported	963,195	13,614,573	906,806	12,575,102	832,295	11,822,410
Hemlock:						
Domestic	2,636,118	19,217,536	[1] 2,218,678	[1] 15,147,529	1,677,181	11,124,455
Imported	152,653	1,100,822			37,243	212,852
Poplar:						
Domestic	489,866	4,299,280	354,125	3,179,101	324,868	2,947,023
Imported	108,809	1,232,819	123,148	1,461,648	95,758	1,111,224
Jack pine:						
Domestic	415,202	3,672,294	[1] 359,755	[1] 3,355,291	[1] 258,570	[1] 2,460,539
Imported	62,773	638,645				
Balsam fir:						
Domestic	388,577	4,067,521	283,506	2,891,304	321,984	3,446,131
Imported	83,609	1,043,995	74,705	891,287	65,392	731,128
Beech, birch, and maple, domestic and imported [1]	298,895	2,939,849	241,039	2,318,285	168,796	1,667,233
White fir, domestic and imported	213,445	1,568,522	[2] 159,428	[2] 953,343	[2] 98,878	[2] 608,238
Cottonwood	74,584	512,064	64,330	428,119	40,996	257,069
Tamarack (larch)	11,324	85,222	8,450	54,620	9,937	80,735
Other woods [3]	509,976	3,059,404	301,195	2,026,107	322,072	2,330,742
Slabs and mill waste	274,935	903,744	319,014	701,388	231,160	813,289

[1] Combined to avoid disclosing data for individual establishments.

[2] Domestic only.

[3] For 1940, domestic chestnut, Douglas fir, yellow poplar, oak, tupelo (and black gum), red gum, willow, and domestic and imported miscellaneous hardwoods not reported separately. For 1939 and 1938, see published reports.

2 YEARS WITHOUT AN OIL CHANGE

IN CIRCULATING SYSTEM

● EACH OIL CHANGE in the circulating system of the hydro-electric turbine in a Michigan plant required 70 gallons of oil. But the cost of oil was not the only reason the plant superintendent wanted to avoid frequent oil changes. Labor for cleaning the system was costly. Shutdowns were not only inconvenient, but expensive.

When a certain oil which he tried lasted only 6 weeks before it needed replacing, he welcomed the suggestion of a Standard Lubrication Engineer that he try a fill of Stanoil—an oil developed particularly for circulating system lubrication.

Now, after two years of operation in this system, Stanoil shows no sign of deterioration and little change in color. The saving in labor, oil costs, and shutdown time has *more* than paid for the difference in cost of this higher quality oil.

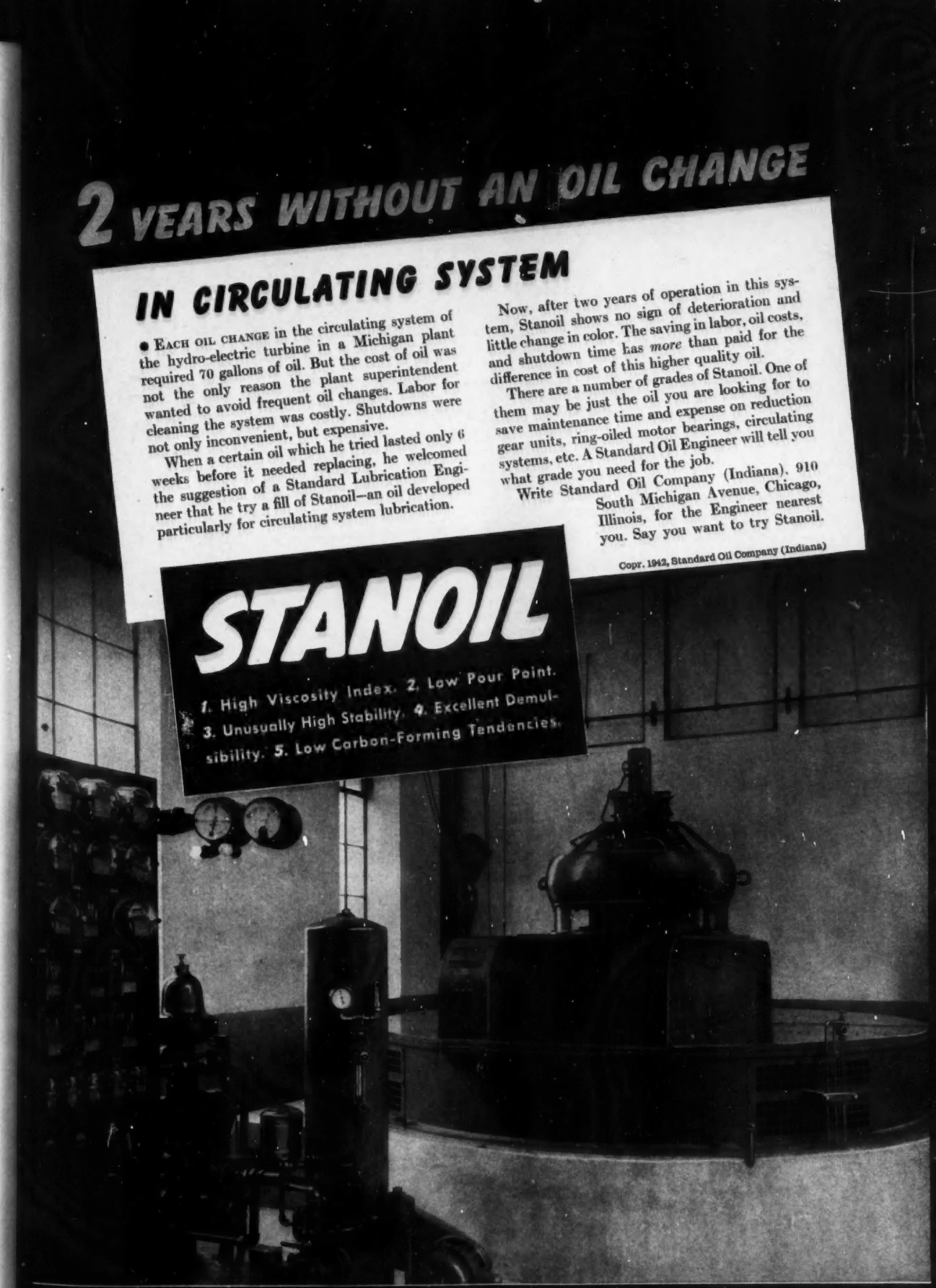
There are a number of grades of Stanoil. One of them may be just the oil you are looking for to save maintenance time and expense on reduction gear units, ring-oiled motor bearings, circulating systems, etc. A Standard Oil Engineer will tell you what grade you need for the job.

Write Standard Oil Company (Indiana), 910 South Michigan Avenue, Chicago, Illinois, for the Engineer nearest you. Say you want to try Stanoil.

Copr. 1942, Standard Oil Company (Indiana)

STANOIL

1. High Viscosity Index. 2. Low Pour Point. 3. Unusually High Stability. 4. Excellent Demulsibility. 5. Low Carbon-Forming Tendencies.



STANDARD OIL COMPANY (INDIANA)

NG...LUBRICATION ENGINEERING...LUBRICATION ENGINEERING...LUBRICATION ENGINEERING...LUBRIC

TABLE III.—WOOD-PULP PRODUCTION—AVERAGE VALUE PER TON, FOR THE UNITED STATES: 1940, 1939, AND 1938

[The figures for 1938 are not strictly comparable with all items for later years (see second paragraph of text, p. 8)]

	1940	1939	1938
Mechanical:			
Not steamed	$18.75	$18.90	$18.40
Steamed	16.93	22.80	17.95
Sulphite:			
Unbleached	38.83	33.92	35.40
Bleached	56.53	50.37	56.51
Sulphate:			
Unbleached	24.58	21.76	21.45
Bleached	44.28	41.69	37.91
Soda, bleached and unbleached	50.98	[1] 44.64	[1] 45.69
Semichemical and other wood pulp	16.58	13.88	14.15

[1] "Bleached" only.

TABLE V.—PULPWOOD CONSUMPTION, BY QUANTITY AND COST, FOR THE UNITED STATES: 1940, 1939, AND 1938

Year	Number of cords	Cost (f.o.b. mill)	Average per cord
1940	13,742,958	$109,739,958	$7.99
1939	10,816,466	84,538,835	7.82
1938	9,193,991	74,433,181	8.10

TABLE VI.—PULPWOOD CONSUMPTION, BY QUANTITY AND COST, AND WOOD-PULP PRODUCTION, BY QUANTITY AND VALUE, BY STATES: 1940

[This table shows statistics by States that can be given without disclosing data for individual establishments]

State	Wood Consumed		Pulp Produced	
	Cords	Cost	Short tons	Value
United States	13,742,958	$109,739,958	8,851,740	$295,524,079
Northeastern and Central States,[1] total	3,199,413	37,721,223	2,260,100	85,818,739
Maine	1,386,878	15,259,632	1,080,818	31,981,027
New York	677,995	9,834,411	526,367	19,122,348
Pennsylvania	386,710	5,171,386	231,536	11,433,940
Vermont	18,854	218,727	19,137	520,758
Other Northeastern and Central States[2]	728,976	7,237,067	402,242	22,760,666
Lake States, total	1,865,248	20,096,151	1,189,541	43,199,362
Michigan	313,038	3,270,428	212,850	7,451,363
Minnesota	349,421	3,240,229	247,076	7,243,658
Wisconsin	1,203,789	13,585,494	729,615	28,504,341
Southern States,[3] total	5,607,831	31,016,404	3,562,836	99,267,020
Alabama	387,237	2,021,988	246,964	5,690,637
Florida	936,112	4,909,843	583,294	17,002,536
Louisiana	1,313,343	7,014,615	864,552	20,134,263
North Carolina	542,281	3,357,954	294,130	11,872,225
Virginia	774,260	4,789,955	496,918	15,276,672
Other Southern States[4]	1,654,598	8,922,049	1,076,978	29,290,687
North Pacific States, total	3,069,466	20,906,180	1,839,263	67,238,958
Oregon	579,804	3,852,959	396,142	9,155,646
Washington	2,489,662	17,053,221	1,443,121	58,083,312

[1] Including Tennessee.
[2] Maryland, Massachusetts, New Hampshire, Ohio, Tennessee.
[3] Not including Tennessee.
[4] Arkansas, Georgia, Mississippi, South Carolina, Texas.

TABLE VII.—PRODUCTION CAPACITY PER 24 HOURS[1]: 1940

Kind of pulp made	Production capacity, unbleached (Short tons)	Bleaching capacity (Short tons)
Mechanical	7,251	....
Soda	1,922	1,910
Sulphite:		
Superpurified	....	307
Rayon and special chemical grades	....	1,045
Other	8,464	4,657
Sulphate	11,853	2,053
Semichemical	592	....

[1] The amount of daily production (total of all grades) which can be prepared for shipment by lapping is 5,808 tons, and by drying, 7,007 tons.

Jim Coy on Eastern Trip

J. H. Coy, vice president of the Flambeau Paper Company, returned January 4 from a two weeks' visit in the East. Mr. and Mrs. Coy have been visiting their son, Jim, Jr., who is a sales executive of the Cherry River Paper Company, Philadelphia.

Quaker Hill Mill Sold

NEW LONDON, Conn., January 5, 1942—After being idle for the past several years the old Woodworth paper mill at the foot of Bolles Hill on the old New London-Norwich road at Quaker Hill, Waterford, has changed ownership and is soon to start production again.

The town of Waterford, which obtained title to the plant and machinery from the Reclamation Company of America in a tax sale several years ago, has sold out to the Paper Reclamation Company of New York.

This concern filed a certificate of organization at the office of the secretary of state in Hartford recently, showing it is starting in business with $1,000 in cash paid in and with 100 shares of stock, without par value.

The organizers are Robert S. Long of New York, president; Allen N. Nadeau of Bellows Falls, Vt., vice president; Felix Henry Bachrach of New York, secretary-treasurer, and Harold Yanof of New York City, an additional director.

Mr. Nadeau is president and general manager of the Green Mountain Tissue Company, of Bellows Falls, Vt.

Repairs to the Quaker Hill building and machinery are now being made and it is expected the plant will begin soon to manufacture paper, a process in which it has been engaged for the past century.

The mill is the last of five paper mills originally located at the foot of Bolles Hill. They derived their power from the waters of Hunt's brook, which is fed by Miller's pond and empties into Smith cove.

The mill, at one time operated by the Robertson Paper Company of Montville, was for most of its existence owned by the family of the present deputy sheriff of New London county, Thomas B. Woodworth of Quaker Hill.

He sold it about 15 years ago to the Reclamation Company of America, which used it for a few years as an experimental plant in de-inking newsprint and making it capable of taking any kind of dye in a satisfactory manner.

War Handicaps Coast Mills

VANCOUVER, B. C., January 2, 1942—Pulp and paper exporters in B. C. face new difficulties as a result of the war's spread to the Pacific on top of the grave problem of the past of making shipments. For some considerable time B. C. plants have been denied the service of most of the regular trans-pacific liners due to their diversion to other routes. Now the problem is one of both markets and transportation.

Until recently Shanghai was buying paper in this market on a fairly large scale, but that business has vanished as the result of Japanese occupation. Similarly the once important pulp trade with Japan collapsed long ago.

British Columbia and Eastern Canadian paper mills are under contract to ship newsprint to Australia, although the amounts have been substantially reduced by wartime rationing. In addition B. C. pulp is being used in combination with native woods in the manufacture of paper in Australia.

Pulp and paper exporters regard transpacific shipments to Australia as a matter of lively and growing interest, but they are so far not alarmed over the situation, believing that a way will be found to maintain the flow of trade.

General Electric Developments of 1941 in the Paper Industry

Among applications of amplidyne generators made in various industries during the year were three in paper mills with particularly interesting backgrounds. One was incorporated in a speed regulator that made the use of two old machines practicable; another effected a better papermachine speed regulator while saving material; and a third, embodied in a constant-current regulator on a wet-end auxiliary drive, lowered the cost of the machine.

Supercalender Drive

Use of a relatively low-cost amplidyne speed-regulating system solved a problem for the West Virginia Pulp and Paper Company at Luke, Md., which had no defense rating for a drive it needed. Its supercalender was in service in a much shorter time than if new machines had been ordered, since use of the amplidyne equipment permitted the company to use an available motor and generator, old and with excessively high internal resistances. In supercalendering service it is necessary to operate at approximately 50 fpm. for threading, and at a top speed of 1500 fpm. in operation. The applied voltage to the motor at threading speed is, therefore, a very small proportion of the maximum voltage, so with the old machines having high internal resistances, very small variations in load would produce large changes in threading speed. A speed regulator was called for and, since speed did not need to be held accurately, it was decided that an amplidyne could be used without auxiliary equipment.

The amplidyne, arranged to provide excitation for the generator, was equipped with both a reference field and an opposing speed-limit field. The speed of the supercalender was measured by a pilot generator and its output voltage compared with that from a standard voltage in the control circuit. Any differences were used to furnish excitation for the speed-limit field. If the speed tended to increase, the increased pilot-generator voltage would reduce the excitation available from the amplidyne and lower the generator voltage, correcting the tendency for the speed to change. If the speed decreased, the reduced bucking action from the speed-limit field raised the generator voltage, restoring normal speed. The circuit was so arranged that preset speed control, a desirable operating feature, was also obtained.

Electronic-amplidyne Regulator

W. C. Hamilton & Sons, of Miquon, Pa., installed a combination electronic-amplidyne speed regulator for a single-motor papermachine drive which makes the use of a motor-operated generator-field rheostat unnecessary. The regulator, besides doing a better job of holding constant the speed of the papermachine line shaft, also saves such vital materials as resistor wire, gears, etc., as required by a motor-operated rheostat.

The arrangement uses the amplidyne as an exciter for the generator which supplies the line-shaft motor in an adjustable-voltage system. The amplidyne is equipped with a reference field that provides excitation for the generator in the proper polarity, and a speed-limit field which opposes the action of the reference field. The speed-limit field is energized from the output of an electronic amplifier. The speed at which the papermachine is to operate may be preset by simply adjusting the potentiometer in the pilot-generator circuit.

Cylinder-type Machine

An amplidyne equipment was used for the first time in a wet-end auxiliary drive supplied by General Electric for a cylinder-type papermachine built by The Black-Clawson Company for the Flintkote Company, Los Angeles, Cal. Use of the amplidyne resulted in lower cost for the electrical apparatus, and for the papermachine.

The main generator is driven from a separate power supply by a motor, instead of from the mechanically driven line shaft as previously. The generator receives its excitation from an amplidyne exciter which adjusts the voltage applied to the motors as the speed of the felt is raised or lowered. In effect it is a constant-current regulator which readjusts the motor speed to maintain a constant load.

With this equipment it is not necessary to depend on the natural ability of an adjustable-voltage system to maintain approximately the proper motor speeds. Instead, the loads which the individual motors are supplying and the distribution of tension in the felt can be much more accurately controlled—and felt life is directly dependent on the tension held.

The friction loads taken by the individual motors are an appreciable portion of the total horsepower required by the papermachine. The introduction of a motor-generator set instead of a mechanically driven generator reduces the size of the line shaft and its right-angle gear as well as the capacity of the prime mover. Elimination of the geared generator also makes available valuable floor space beside the papermachine.

Factory-assembled Control

Bemis Brother Bag Company, which formerly purchased separate control items for its multi-wall bag-machine drive, saved work, expense, and time by adopting a co-ordinated control equipment having a major portion of the control stations mounted on a benchboard-type enclosure. Thirty-two control functions are at the operator's command by means of the control stations on the enclosure. The unit is completely wired and tested at the factory, so the customer need only connect the incoming power lines and the outgoing lines to the various motors.

Seven-section Drive

The seven-section, 212-in., 1500-ft. per min. papermachine drive at the St. Mary's Kraft Corporation plant at St. Mary's, Ga., obtains its d-c power from a 1000-kw. 600-volt set, and its control system is included in a self-supporting, factory-built-and-wired unit control structure.

Chipper

The usual chipper varies from 64 in. to 110 in. in diameter, uses up to 350 hp., handles logs having a maximum diameter of 12 in. and a length of four to ten feet, and has an output of 10 to 15 cords per hour. Sumner Iron Works is building for Weyerhaeuser Timber Company the world's largest pulpwood chipper, with a 1000-hp. wound-rotor induction motor. The control will automatically vary the speed-torque characteristic of the motor, depending on the load, to utilize the energy in the 14½ ft. diam. disk—at full speed equivalent to 16,500,000 lb.-ft. or 30,000 hp.-sec. By utilizing a portion of this stored energy, the peak load requirements of the motor are minimized, even when chipping the largest logs—of 40-in. diameter. The log is automatically blocked by an electrically controlled spur if the motor and disk slow down to a point where the power demand is excessive. The motor then restores energy to the disk at a nominal rate until normal speed is regained, at which point the spur automatically releases to permit the log to continue into the chipper. Logs as large as 40-in. in diameter and 24 ft. long will be handled, and output will be 100 cords per hour.

New TAPPI Members

The executive committee of the Technical Association of the Pulp and Paper Industry has elected the following to membership:

Newell J. Berger, field engineer, Armstrong Machine Works, Three Rivers, Mich., attended the University of Chicago and was formerly with the Water Development Company and the F. W. Rockstraw Company, Pittsburgh, Pa.

Homer N. Calver, secretary, Public Health Committee of the Cup and Container Institute, New York, N. Y., has been transferred from the Associate to the Active grade.

Y. F. Combs, chief chemist, J. R. Short Milling Company, Chicago, Ill., a 1929 graduate of Harvard College and formerly with the Chicago Board of Education, Chicago.

Harry A. Cunningham, chemist, The Gardner-Richardson Company, Lockland, Ohio, a 1940 graduate of Miami University.

William Hugh Lane, student, Institute of Paper Chemistry, Appleton, Wis., a 1938 graduate of Rice Institute.

William M. Lehmkuhl, plant superintendent, The Flintkote Company, New York, N. Y., a 1929 graduate of Indiana College.

Keith W. Max, student, Institute of Paper Chemistry, Appleton, Wis., a 1939 graduate of DePauw University.

Sumner D. Morris, student, University of Maine, Orono, Maine.

Gordon Morseth, digester foreman, Puget Sound Pulp and Timber Company, Bellingham, Wash., a 1937 graduate of the University of Washington and formerly with Henry Disston and Sons, Seattle, Wash.

Erving W. Rasmussen, chief chemist, Marinette Paper Company, Marinette, Wis., a 1931 graduate of the University of Wisconsin and formerly with the Lloyd Manufacturing Company, Menominee, Mich.

R. Lawrence Scoville, chemist, Champion Paper and Fibre Company, Hamilton, Ohio, a 1941 graduate of New York State College of Forestry.

Robert T. Sheen, director, consulting division, W. H. and L. D. Betz, Philadelphia, Pa., a 1931 graduate of Lehigh University and formerly with the Swann Chemical Company, Anniston, Ala.

Arthur J. Steinbach, student, New York State College of Forestry, Syracuse, N. Y.

George W. Sullivan, chemist and manager, Sullivan Paper Company, Springfield, Mass., has been reinstated as an Active member.

James E. Watson, engineer, Wisconsin Wire Works, Appleton, Wis., a 1932 graduate of the University of Wisconsin.

Dryden Paper Output Doubled

[FROM OUR REGULAR CORRESPONDENT]

TORONTO, Ont., January 5, 1942—For the past several months the Dryden Paper Company has been producing kraft pulp at the rate of over 30,000 tons a year, according to President F. A. Sabbaton, in his annual report to shareholders.

This is considerably in excess of last year, when production was sharply curtailed owing to a power shortage brought about by unusually low water conditions in the Dryden district. This condition has been overcome by the addition of steam-driven units and energy purchased from the Ontario Hydro Electric Commission.

Due to the increased demand for containers and other wrapping papers, principally in the United States, due to war conditions, Mr. Sabbaton says the market price for kraft pulp has risen to a point where, for the first time in many years, it exceeds cost of production.

In the past it has been the policy of Dryden Paper to manufacture only the amount of pulp required for conversion into the finished product in its own mills, together with such pulp for sale as would permit the mills to operate at their most economical point. For this reason the Dryden plant for the period from 1933 to 1940 turned out only slightly over 15,000 tons of pulp a year, on an average. This has been at the rate of approximately 50% of rated capacity.

It should be noted, says Mr. Sabbaton, that as his experience over many years of selling kraft pulp on the open market has proved unprofitable, it would seem inadvisable for the company to further expand its pulp capacity, unless the same is converted into a finished product in its own mills, or unless Canada's war effort urgently requires an increased amount of kraft pulp.

Cincinnati Cordage Holds Dinner

The Cincinnati Cordage and Paper Company held its annual meeting at the Netherland Plaza Hotel in Cincinnati, Monday, December 29. The management and salesmen from the Dayton, Cincinnati, and Knoxville houses were present, as well as all the salesmen from the branch offices in Columbus, Lima, Springfield, Chattanooga, and Wheeling. The meeting began in the morning and ended with a banquet at night. All officers of the company, A. T. Nesbitt, John Church, Gale Evans, Don Nesbitt, and Ed Evans spoke. Talks were given also by each of the salesmen. The management and salesmen expressed abundant confidence and felt that with added cooperation and individual help, the paper merchants need have no fear for the uncertainty of the future.

Clepaco Promotional Service

Back a year and a half ago when prospects were not so rosy as today, and getting business was still a paramount factor, Gale Craig, who is in charge of promotion for the Cleveland Paper Company, Cleveland, Ohio, and who has spent many years in the printing and paper trades, wanted a plan something different, not necessarily for his customers and those of his firm, but for the individual who bought printing the year around and left the specifying of paper to the printer, rarely giving brands or their supplier a second thought.

These fellows would influence a lot of business, but rarely thought to do so. Here was a big opportunity, a virgin field, seldom worked, and never effectively. What could be done to put this influence to work to build up sales? With this idea in mind Craig evolved a plan, which, according to A. H. Seyler of The Cleveland Paper Company, produced tangible results in new business of over $50,000 in twelve months and a greater untraceable increase, probably due to the same efforts.

In brief, a list was made of all advertising managers and executives responsible for the buying or influencing of printing. These men were called on personally, presented with a drawing pad, and told of a plan to furnish them monthly with aids to assist in the preparation of layouts, suggestions and helps for advertising. The following call brought a "T" square for the pads, and subsequent calls such articles as art gum, angles, crayons, tissue pads, type line estimator, and similar other items, which were received with much favor when personally presented.

After only several visits the recipients of these favors began to ask concerning the cost of the valuable assistance they were receiving. The answer was always the same—"Your good will and the hope you will specify our papers from a special book I am having prepared for you." This came later, a complete brochure showing all types of letterpress printing on varied stocks, all styles of zincs, and the full range of screened halftones to answer every question that might arise on the finished printing job.

Many other original copyrighted features completed the series. From time to time follow up letters reminded the list of the service and offered replacements as supplies were used up. After the first couple of months letters began to flow in telling of jobs to be let and of having specified Mr. Craig's brands of paper.

The following are among the users of the Clepaco Promotional Service:

Carter Rice & Co., Boston, Mass.
Ohio and Machingan Paper Company, Toledo, Ohio.
Chope Stevens Paper Company, Detroit, Mich.
Cleveland Paper Company, Cleveland, Ohio.
Paper Service, Inc., Rochester, N. Y.
Paper Service, Inc., Buffalo, N. Y.
Paper Service, Inc., Syracuse, N. Y.
Drew & Wing Paper Company, Cincinnati, Ohio.
Century Paper Company, Indianapolis, Ind.
Dudley Paper Company, Lansing, Mich.
Raymond & McNutt Company, Philadelphia, Pa.
Chatfield & Woods Company, Pittsburgh, Pa.

Changes in the Import Field

The manner in which the war is revolutionizing industrial processes is nowhere more evident than in the paper industry, and developments in the import field are only one evidence of the radical changes now in progress, according to Warren B. Bullock, Manager of the Import Committee of the American Paper Industry.

Imports from Scandinavia and continental Europe are practically non-existent. Great Britain is shipping considerable quantities of the papers in which its mills specialize, such as carbon tissues and handmade papers, but not in as large quantities as at the outset of the war. Exports, on the other hand, particularly to Latin America have increased rapidly.

While domestic mills are making wide changes in grade classifications, cutting down the brightness of their papers, etc., Canada is coming into the American field with large quantities of papers of types never hitherto produced. Other standard grades never before imported from Canada are now coming into this country regularly. All of these shipments raise new problems for the Import Committee and the Custom officials, who are called upon for classification of papers new to even the paper industry itself. These officials, as has been customary since the Import Committee was formed, rely largely on the Committee for information on which to base their decisions. A typical example is the large scale shipments of 9-point groundwood corrugating material as a substitute for the better known kraft, straw, chestnut and other corrugating stock. This material is being classified for duty as paper not specially provided for at 30 precent, being a type of material not known when the existing Tariff Act was passed.

In all of these cases the Import Committee is cooperating with the Government officials to secure a correct classification of the imported papers, endeavoring to secure such classifications as will facilitate the defense effort, without establishing precedents which may have a serious effect on established domestic operations when foreign shipments are again available to domestic buyers.

In following this policy it is at times necessary to secure the imposition of duty rates which are temporarily disadvantageous to domestic consumers, as in the case of the 9-point corrugating material. Nevertheless, the Import Committee and the paper industry in general agree that the correct interpretation of existing law must be insisted upon, regardless of who may be temporarily inconvenienced or put to additional expense.

Sorg Co. Installs Ferry Service

[FROM OUR REGULAR CORRESPONDENT]

VANCOUVER, B. C., January 5, 1942—The Sorg Transportation Company, Ltd., navigation subsidiary of the Sorg interests which have acquired and are now operating the pulp mills at Port Mellon, B. C., have now commenced a ferry service between the mill and Vancouver. Complete overhaul of the old car ferry slip on the Hastings Mills site, on property of the National Harbors Board at Vancouver, B. C., has been completed and will be used as the terminal for the service.

N. A. Kenna to Address N. P. T. A.

The 39th Annual Convention of The National Paper Trade Association will be held at the Waldorf-Astoria Hotel, in New York City, Monday to Thursday, February 16-19. It will include the usual Exhibit of Wrapping Paper, Paper Products, Twines and Kindred lines for which space has already been reserved by upwards of thirty manufacturers and converters. Applications should reach the Association office by January 12 on which date will be held the usual drawings for choice of space.

It is announced with enthusiasm that Norbert A. McKenna, Chief of the Pulp and Paper Branch of the Office of Production Management, will be the head line speaker at the opening session of the Convention which manufacturers and other members of the trade are cordially invited to attend. The Industry has not forgotten Mr. McKenna's memorable address at the Association's Convention in Chicago last fall, and his acceptance of an encore, so to speak, for the coming meeting gives general satisfaction. He has expressed great appreciation of the assistance given him by the Advisory representatives of the distributing trade and will doubtless report on what has been accomplished as well as the outlook for supplies and the future policies of O.P.M.

Another Governmental official who has accepted an invitation to address the convention is J. F. Strub, chief of the distribution Division of the Pulp and Paper Section of the Office of Price Administration. Mr. Strub is a Paper man who has within recent weeks made personal contacts with many members of the trade. He has shown a clear and sympathetic understanding of their operations and problems. His address, therefore, outlining the policies and methods of the price officials as affecting fine and wrapping paper distribution will be most timely and informative.

Other details regarding the program will shortly be announced including, it is expected, a meeting of the Fine Paper Division to be addressed by George F. Lee, and a Wrapping Paper Division session to be addressed by Frank W. Howe. Both these speakers are active members of the staff of O.P.M.

Form Pulp Administration Bureau

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., January 6, 1941—A Pulp and Paper Products Administration Bureau has been established as a separate unit of the Wartime Prices and Trade Board, and has been given offices in the Aldred Building in Montreal. The Bureau is in charge of W. H. Howard, K. C. of Montreal as co-ordinator. Associated with him are:

W. H. O'Reilly, paper board administrator.

F. C. Hayes, vice-president of Shipping Containers Ltd., administrator of shipping cases, corrugated boards and solid fibre.

C. M. Matheson, of Fraser Companies Ltd., wood pulp administrator.

G. Meredith Smith, C.A., of P. S. Ross and Sons, newsprint administrator.

S. Harvey Smith, of St. Maurice Valley Paper Company, administrator of wrapping paper and multiwall sacks.

Chief problems facing the new division concern maintenance of prices in the face of rising costs and supply difficulties in regard to raw materials, chemicals, etc., used in the industry.

Our Fight Against Cancer

The real existence of the greatest national emergency in our history is now recognized by every intelligent American citizen says C. C. Little, ScD., Managing Director of the American Society for the Control of Cancer. Along with the vast demands made upon our courage and patience by this situation is a keener realization of our responsibilities to care for the lives and happiness of those unfortunate people who find themselves in personal physical adversity.

The greatest of all these menaces to the health, happiness and life of our people is cancer. The quality of its threat and of its power as a killer is unique. War itself may take a larger toll of Americans in the years to come. Various heart conditions of cardiac disease may do the same thing. Neither, however, will so silently, so grimly, and with such evil power to disintegrate moral stamina, invade the lives and families of our people. We must not lose sight of this fact. No matter what our emergency obligations may be, we must not forget this great continuing enemy of mankind.

Fear, ignorance, and delay are the three allies of cancer which lead to disaster and death. They can be overcome by knowledge of the early signs and symptoms of the disease and of the methods of fighting it. The American Society for the Control of Cancer throughout the country has for years been engaged in this battle. It is making progress. It must not lose the gains made, and indeed must drive ahead. The defeat of fear, ignorance, and delay lies in the adoption of an intelligent and controlled point of view by each individual. The same qualities will contribute to his or her success in fighting whatever the national emergency may present.

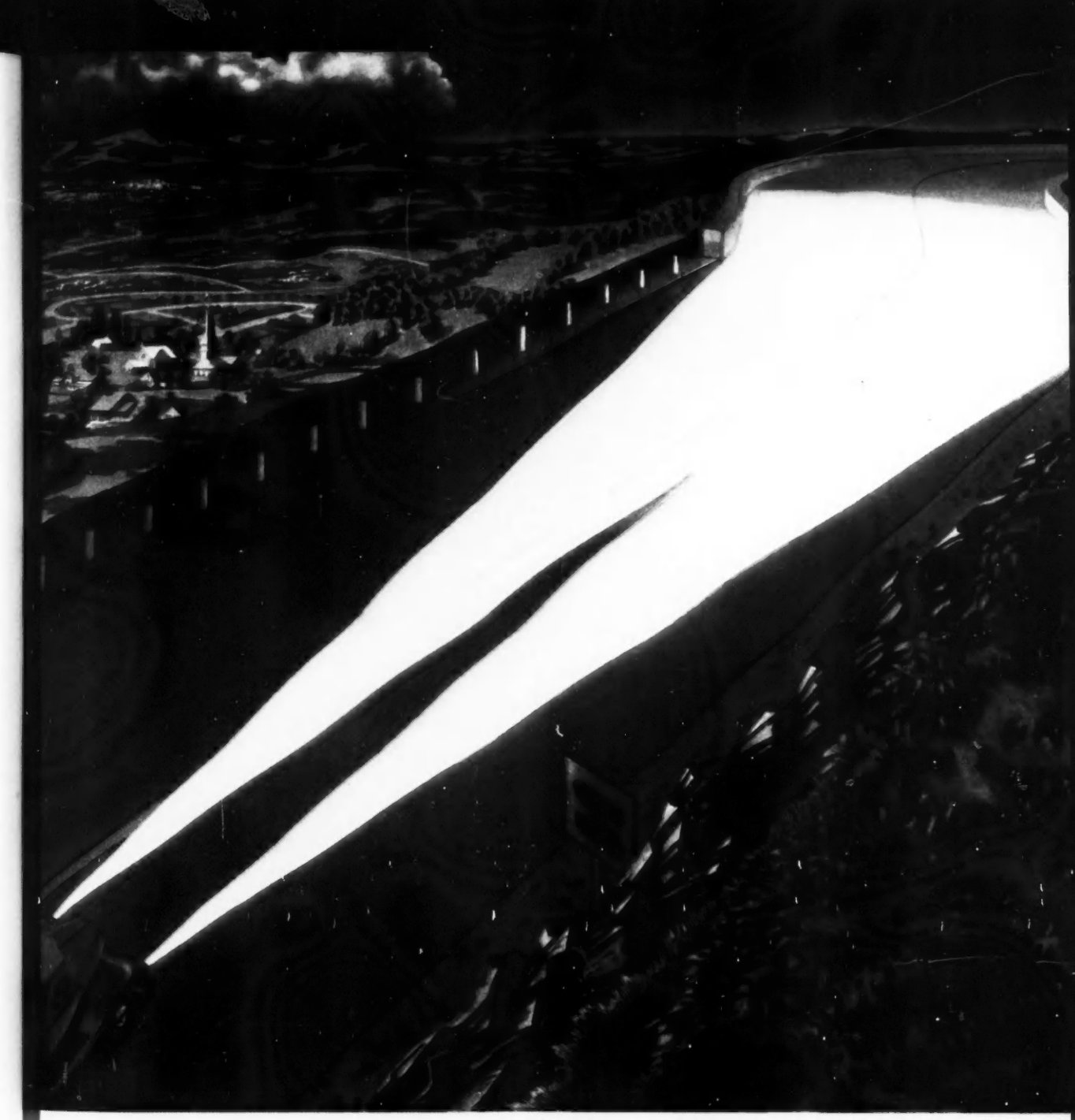
The fight against cancer is an ally in the fight against our foreign enemies. The methods are much the same. The qualities appealed to in the individual are similar. The complete victory spoken of by the President in discussing the international situation is just as applicable to our fight against cancer. Both victories can be gained. We must recognize how closely they may be related and must act speedily, courageously, and untiringly to make both possible.

To Advise on Color

In order to make sure that the colors it issues are not only fashionable but also obtainable at this time, the Textile Color Card Association has appointed an advisory committee composed of representatives of leading dyestuff producers, Margaret Hayden Rorke, managing director, announced yesterday.

The function of this committee, Mrs. Rorke explained, will be to guide the association's various color committees on all dyestuff problems so that when seasonal colors are chosen the association will be assured that at the time the shades can be produced without affecting the government's needs for vital materials.

Members of the committee are B. R. Price of the National Aniline Division of Allied Chemical and Dye Corporation; J. F. Warner of the Calco Chemical Division, American Cyanamid Company; Samuel I. Parker, Ciba Company, Inc.; W. F. Van Riper, E. I. du Pont de Nemours & Co., Inc.; Daniel P. Knowland, Geigy Company; J. R. Bonnar, General Dyestuff Corporation, and James Walker of Sandoz Chemical Works, Inc.



FROM THE ORIGINAL, PAINTED ESPECIALLY FOR NIAGARA ALKALI COMPANY BY FRED FREEMAN

WHEN TWO strong beams of light are focused on a course of progress each serves to strengthen the other and create a single beam of more concentrated power and efficiency. The resources of Niagara Alkali Company and Electro Bleaching Gas Company have thus been centered in one organization on one course to become a more powerful, efficient and useful organization to the industries they have each been serving separately. As one closely integrated whole, operating with combined manufacturing, research and personnel facilities, this company now serves the former customers of each under the name of NIAGARA ALKALI COMPANY.

EBG Niagara ALKALI COMPANY

60 EAST 42nd STREET, NEW YORK, N. Y.

CAUSTIC POTASH · CAUSTIC SODA
PARA · CARBONATE OF POTASH
Liquid Chlorine

Obituary

Oscar A. Jorgenson

[FROM OUR REGULAR CORRESPONDENT]

Oscar A. Jorgenson, age 50, director, secretary and assistant manager of the British Columbia Pulp and Paper Company, Vancouver, B. C., died after a two-week's illness at St. Paul's Hospital, Vancouver.

Mr. Jorgenson was born in Dominion City, Manitoba and started his business career with the Canadian Pacific Telegraphs. Later he joined the Whalen Pulp and Paper Company and when that business was merged with operations of the B. C. Pulp and Paper Company, Ltd., he accepted an executive post with the latter concern. He continued in this position until about a year ago when he was appointed assistant general manager as well as continuing as secretary of the company.

Mr. Jorgenson was actively connected with the Canadian Forestry Association for several years, being a director and in 1939 president of the B. C. branch of the association.

He was a member of the Terminal City Club, the Shaughnessy Heights Golf Club and the Vancouver Lawn Tennis and Badminton Club.

John W. Outerson

PHILADELPHIA, Pa., January 5, 1942—John W. Outerson, general superintendent and a director of the Paterson Parchment and Paper Company, Bristol, died December 23, in Jefferson Hospital. He was 70 and lived at the Walton Hotel.

He was born in Windsor Locks, Conn., where he received his early training in the paper business with the Seymour Paper Company. Later he became superintendent of the William Nixon Paper Company here. He had been associated with the Bristol firm since 1918. Surviving him are his widow, Margaret L., and a brother, Daniel L., of Buffalo. Funeral services were held at the funeral establishment of Oliver H. Bair, 1820 Chestnut street. Burial was in Westminster Cemetery.

Carroll J. Enemark

Carroll J. Enemark, chemist at the Marvellum Company, Holyoke, Mass., died Sunday, December 28, 1941, at St. Petersburg, Fla.

Government Paper Bids

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., Jan. 7, 1942—The Government Printing Office has received the following bids for 10,000 pounds of 19 x 24" heavy white blotting paper: Bradner Smith & Company, 14.20 cents; Whitaker Paper Company, 11.91 cents; Barton Duer & Koch Paper Company, 14.75 cents; Old Dominion Paper Company, 14.988 cents; Mudge Paper Company, 15 cents; Mathers-Lamm Paper Company, 14.95 cents; Cauthorne Paper Company, 15 cents; R. P. Andrews Paper Company, 15.9 cents; and Graham Paper Company, 14.25 cents.

For 1,000,000 pounds of 22½ x 28½", U. S. postal card bristol board: R. P. Andrews Paper Company, 6.17 cents (500,000 pounds only); Barton, Duer & Koch Paper Company, 6.98 cents (200,000 pounds only); and Whitaker Paper Company, 6.2 cents (500,000 pounds only).

For 5,430 pounds of 26½ x 41", 50% rag, gray laid cover paper: R. P. Andrews Paper Company, 12.37 cents; Whitaker Paper Company, 16.8 cents; and Barton, Duer & Koch Paper Company, 14.25 cents.

For 10,000 sheets of 20 x 26" red glazed paper: Whitaker Paper Company, $10.35 per M sheets; R. P. Andrews Paper Company, $11.57; Mathers-Lamm Paper Company, $12.00 and $14.95; and Mudge Paper Company, $14.80.

For 140,000 pounds of telephone book paper in 38" rolls: Old Dominion Paper Company, 5.749 cents; R. P. Andrews Paper Company, 5.9225 cents; Mudge Paper Company, 5.78 cents; Barton, Duer & Koch Paper Company, 5.75 cents; Cauthorne Paper Company, 5.15 cents; and Combined Locks Paper Company, 5.4 cents.

For 8,040 pounds of 75% rag, 21 x 32" white ledger paper: Wilcox, Walter, Furlong Paper Company, 22.5 cents; Resolute Paper Products Corp., 22.5 cents; Frank Parsons Paper Company, 20.25 cents; Walker, Goulard Plehn Company, 21.95 cents; Mudge Paper Company, 22.40 cents; Old Dominion Paper Company, 22.48 cents; Paper Corp. of U. S., 22.7 cents; and Baxter Paper Company, 22.5 cents.

For 5,000 pounds of 100% rag, 21 x 32½" white ledger paper: Wilcox, Walter, Furlong Paper Company, 29 cents; Resolute Paper Products Corp., 28 cents; Frank Parsons Paper Company, 29 cents; Walker, Goulard Plehn Company, 27.94 cents; Mudge Paper Company, 26.87 cents; and Paper Corp. of U. S., 26.8 cents.

For 740,000 pounds of 32½ x 42½" white mimeograph paper: Cauthorne Paper Company, 8.36 cents; and Marquette Paper Company, 7.45 cents.

For 287,000 pounds of 32 x 42", 50% rag, white bond paper: Walker, Goulard Plehn Company, 17 cents; R. P. Andrews Paper Company, 15.4 cents; Stanford Paper Company, 18.7 cents; Graham Paper Company, 17 cents; and Barton, Duer & Koch Paper Company, 17 cents.

For 52,000 pounds of 28 x 34" H.F. manila tag board: R. P. Andrews Paper Company, 7.25 cents; Old Dominion Paper Company, 7.189 cents; Barton, Duer & Koch Paper Company, 6.25 cents; and Paper Corp. of U. S., 7.85 cents.

Approve Wage Agreement at Fulton

[FROM OUR REGULAR CORRESPONDENT]

FULTON, N. Y., January 5, 1942—A meeting of the local branch of the International Brotherhood of Pulp Sulphite and Paper Mill Workers was held here last week at which a new wage agreement with the Oswego Falls-Sealright Corporation was approved. The new agreement goes into effect immediately and the employees will receive a raise of three cents an hour. In addition the agreement provides that pay rates will be adjusted at certain periods of the year in proportion to the rise in the cost of living as computed by the Federal Labor Department. A labor official also announced that a separate union account totaling $1,101.45 known as the employees' benefit fund would be used in purchasing government bonds. Unanimous union approval was given at the meeting for this step.

Metallizing Saves Time Loss

The Robert Gair Company of Tonawanda, N. Y., has supplied the following information and photographs, of the most interesting proofs of the importance of the Mogul Metallizing process in aiding National Defense through the conservation of tremendous quantities of metals and considerable time. The photographs are of a beater shaft Fig. 1 showing the shaft prepared for metallizing and photograph Fig. 2 the completed shaft.

The paper that is used in this beater is scrap containing all kinds of foreign material such as scraps of steel, wire, stones or anything that gets in a waste basket. The wire does the damage, it winds around

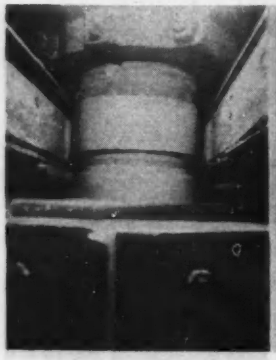


FIG. 1

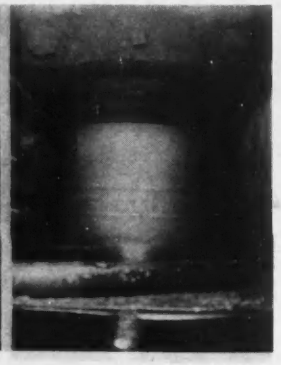


FIG. 2

the shaft and over a period of time it cuts the shaft in half. In Fig. 1, the groove is on the inner edge of the packing. The packing is two blocks of wood.

To save a shut down period similar to that which happened two years ago, when a like condition existed, requiring three weeks to obtain a new shaft at a cost of $500, due to the shaft weighing close to 7 ton and with present conditions as they are it would require considerably longer to obtain a new shaft and with further thought of conserving the metal it was decided to metallize to restore the worn surface. Further while spraying it was decided to use a harder metal that would give greater resistance to the extreme conditions confronting the shaft. A. E. Vandersee, engineer of the Metallizing Company of America, assisted in the work.

The preparation was made by blasting, using very coarse sand. The blasting required 20 minutes time. One quarter of the shaft was blasted at a time. Turning the beater over with the use of a chain hoist, a platform was built over the beater to get a little better working condition. The beater was then rotated at full speed under its own power at about 300 rpm. The gun was lowered to the work on a ½ inch rod which fit on the swivel tool post holder, on the other end of the rod the tool post bar was used and with a "C" clamp it was held in place on the edge of the plank platform.

Working conditions were not ideal, but in 6 hours and 15 minutes of time the cavity, which was 3 inches wide and ⅞ inches deep on the 14 inch diameter shaft was filled in with 32 lbs. of No. 1 Stainless. The Mogul gun was stopped once to change wire and once to change the oxygen tank. Great care was used to put on a very smooth coating. This saved finishing machining.

TAPPI Chemical Methods Committee

As a part of the reorganization plan of the Testing Division of the Technical Association of the Pulp and Paper Industry a new committee has been set up to handle all testing chemical procedures relating to fibrous materials. B. L. Browning of the Institute of Paper Chemistry has been appointed chairman.

Associated with Dr. Browning on the Chemical Methods Committee are the following:

Milton F. Fillius, Eastman Kodak Company.
R. S. Hatch, Weyerhaeuser Timber Company.
Harold Hibbert, McGill University.
W. F. Holzer, Crown-Zellerbach Corporation.
Francis G. Rawling, West Va. Pulp and Paper Co.
John L. Parsons, Hammermill Paper Company.
Edwin Sutermeister, S. D. Warren Company.
P. F. Wehmer, Electrical Testing Laboratories.

WOOD AND PULP ANALYSIS SUBCOMMITTEE

S. I. Aronovsky, Iowa State College.
H. K. Benson, University of Washington.
R. D. Freeman, Dow Chemical Company.
W. F. Holzer, Crown-Zellerbach Corporation.
E. C. Jahn, New York State College of Forestry.
T. A. Pascoe, Nekoosa-Edwards Paper Company.
George J. Ritter, Forest Products Laboratory.
John C. Tongren, Hammermill Paper Company.

PAPER ANALYSIS SUBCOMMITTEE

J. Lindsey Crossley, Defense Industries, Ltd.
R. C. Griffin, A. D. Little, Inc.
M. S. Kantrowitz, Government Printing Office.
H. F. Launer, Bureau of Standards.
Edwin Sutermeister, S. D. Warren, Inc.
L. B. Tucker, Crane & Company.
A. Kenneth Warner, Skinner & Sherman, Inc.
P. F. Wehmer, Electrical Testing Laboratories.

This committee will conduct a session on viscosity and other tests at the annual meeting of TAPPI at the Commodore Hotel, New York, N. Y., on February 16, 1942.

Current Literature

High pressure hydraulic control hose, is described in a 41-page catalogue section issued by The B. F. Goodrich Co., Akron, Ohio. It explains the functions of hydraulic control hose, uses of the product and other features. A formula for bending radii is given.

Index of products and engineering services, is covered in Bulletin No. 585, issued by The Bristol Co., Waterbury, Conn. It describes air-operated and electrically operated automatic control instruments, recording and indicating instruments and telemetering instruments for recording and remote control.

Recording instruments for temperature and pressure, are described in Catalogue No. 1210, issued by C. J. Tagliabue Manufacturing Company, Park & Nostrand avenues, Brooklyn, N. Y. It includes the company's new line of recording thermometers and recording pressure gauges. Complete data on mercury, fully-compensated mercury, vapor tension and gas-filled tube systems are included.

Steam traps are described in Bulletin No. 1041, issued by W. H. Nicholson & Co., 12 Oregon street, Wilkes-Barre, Pa. It covers the new "Type AHV" industrial steam trap for straight-through horizontal or vertical piping. This is a supplement to Bulletin 439, which describes the complete Nicholson line of industrial steam traps.

RESUMES CAPACITY PRODUCTION

(Continued from page 7)

from Appleton homes in the month of December by Boy Scouts and Girl Scouts. A district collection system is used, so each home is visited once a month. Constant newspaper publicity is making it a household custom to save all paper and containers.

Thilmany Has Fine Safety Record

An outstanding safety record was achieved by the bag mill of the Thilmany Pulp and Paper Company, Kaukauna, Wis., when on December 31 its 108 workers completed 612 days without a lost-time accident, according to L. C. Smith, personnel director. The last accident occurred April 26, 1940.

Thilmany's lower mill completed 103 days without a lost-time accident, the last one occurring September 19. There are 380 workers in this mill.

A mill safety contest was completed December 31 in which the "Blue" team defeated the "Red" team by a score of 10,209 points to 9,674. Each team was given 10,000 points at the start. A committee of ten members of the Blue team will decide the manner of distribution of $100 in prize money.

To Conduct Safety Engineering Classes

Classes in industrial safety engineering will be conducted in the Fox River Valley at Appleton and Green Bay, Wis., this winter by the extension division of the University of Wisconsin, according to announcement of Dean F. O. Holt. The program's general purpose is to assist industries in training key supervisory employees in the practices and procedures needed to keep workers safe on the job, especially in defense plants.

Appleton Pays "Labor Dividend"

A "labor dividend" of 5% has been distributed to each employee of the Appleton Woolen Mills, Appleton, Wis., according to A. H. Wickesberg, treasurer and general manager. The "dividend" was based on the earnings of each employee for the year 1941.

Nash-Tuchscherer Nuptials

The marriage of William C. Nash of Neenah, Wis., and Miss Kathryn Ann Tuchscherer of Menasha, Wis., took place December 27 at St. Mary's church, Menasha. Mr. Nash is associated with the International Cellucotton Products Company at Andover, Mass., where the couple will reside.

Appleton Machine Co. Builds Addition

The Appleton Machine Company, Appleton, Wis., is building an addition 44 by 99 feet at an estimated cost of $8,000. The foundation is of permanent construction but a one-story frame structure will be built above it for immediate installation of machinery to be used on defense contracts. The company later plans to build permanent walls and roof.

West Carrollton Elects Officers

The West Carrollton Parchment Company, manufacturers of genuine vegetable parchment and waxed papers, West Carrollton, Ohio, has elected the following officers whose terms begin January 1:—M. E. Moyer, president and general manager; C. W. Moody, vice president and L. F. Waitzman, secretary and treasurer.

Cincinnati Rubber Covered Rolls and Cincinnati Transmission Belts are doing a "swell" job . . . that's the word coming from mills producing tremendous tonnages of paper to meet the demands of today.

Important U. S. paper mills are putting a big responsibility on these two Cincinnati products that are standing the hard, steady grind . . . meeting unusual production schedules . . . giving a service that meets the most enthusiastic expectations.

The Cincinnati Rubber Mfg. Co.
Cincinnati, Ohio

CONSTRUCTION NEWS

Georgetown, S. C.—The Agar Box Company, has completed plans for new corrugated box-manufacturing plant on site adjoining mill of Southern Kraft Division of the International Paper Company at Georgetown. It will be one-story, reported to cost over $85,000, with equipment. Corrugated board requirements will be secured from the local mill. Erection is being placed under way and is scheduled for early completion.

Los Angeles, Calif.—The Independent Paper Stock Company, 2417 East 12th street, commercial paper goods, will make alterations and improvements in building at location noted, including storage and distributing facilities. General contract has been awarded to MacIsaac & Menke, 3445 Union Pacific avenue, Los Angeles, and work will be placed under way at once. No estimate of cost announced.

Appleton, Wis.—The Appleton Coated Paper Company, North Mead street, manufacturer of coated paper stocks, cover stocks, etc., has superstructure under way for new addition to mill, previously referred to in these columns, to be one-story, reported to cost over $25,000, with equipment. Completion is scheduled at early date. Fred Hoeppner Sons, Inc., 1203 North Union street, Appleton, has the general erection contract.

Denver, Colo. — Continental Paper Products Company, 1000 West Louisiana avenue, manufacturer of corrugated paper boxes and containers, has filed plans for improvements in steam plant, including installation of a new stoker and auxiliary equipment. No estimate of cost announced. Award for stoker unit has been made to United Fuel & Equipment Company, 1729 California street, and work will proceed at once.

Kalamazoo, Mich. — The Bryant Paper Company, Bryant street, manufacturer of book, writing, offset and kindred paper stocks, has approved plans for alterations and improvements in mill, and will proceed with work at once. A building permit has been issued. Cost is estimated close to $35,000.

New Haven, Conn.—The New Haven Pulp and Board Company, East street, manufacturer of news board, chip board and kindred paper board products, has completed plans for alterations and improvements in plant, including installation of steel floor beams to carry additional machinery load, preparatory to the installation of equipment, and other miscellaneous work. No estimate of cost announced. Work will be carried out by day labor.

Wisconsin Rapids, Wis. — The Consolidated Water Power and Paper Company, Wisconsin Rapids, has secured permission from the Wisconsin Public Service Commission to carry out construction of a dam and hydroelectric power development at DuBay in northern part of Portage County, previously referred to in these columns, and on which work is now in progress. Entire project is estimated to cost about $2,122,700, including hydroelectric generating station, transmission lines, power substation and other operating facilities. Completion is scheduled next August. Power output will be used by company at mill at Wisconsin Rapids, to which point transmission line noted will be constructed.

Dearborn, Mich.—The Ford Motor Company, Dearborn, has perfected a process for the production of synthetic fiber from soybeans, following the operation of a pilot plant at its mill at Highland Park for a number of months past. Company now plans limited commercial production and is arranging for early removal of the experimental plant to main works at Dearborn, where additional machinery and equipment will be provided for increased capacity. The new plant will be operated in conjunction with company soybean processing mill at River Rouge, which will furnish basic raw material for further processing at the Dearborn plant, which will have an initial capacity of about 1000 pounds per day.

Chicago, Ill.—The Illinois Shipping Container Company, 1520 North Pershing road, manufacturer of solid fiber shipping boxes and containers, has arranged for purchase of building at location noted, occupied under lease for several years past. The structure will be developed for permanent occupancy. It is located on a site 110 x 230 feet, and was acquired for an indicated consideration of $110,500.

New York, N. Y.—The Knickerbocker Container Company, 100 Wooster street, corrugated boxes and containers, has leased ground floor space in the building at 146 Spring street, and will occupy for storage, distribution, sales, and general operations.

Appleton, Wis.—The Institute of Paper Chemistry, 1101 East South River street, is awarding miscellaneous sub-contracts for construction of new addition to laboratory building, previously referred to in these columns, including structural steel framing to Vulcan Manufacturing Company, Fond du Lac, Wis.; reinforcing steel to Cook & Brown Lime Company, Oshkosh, Wis.; and for steel sash, to Crittall-Federal, Inc., Waukesha, Wis. New structure will be two story and basement, 40 x 123 feet, and will be equipped as a machine building. Work on superstructure is scheduled to begin this month. General erection contract is being carried out by Ben B. Ganther Company, 78 State street, Oshkosh. Orbison & Orbison, 206 West College avenue, Appleton, are consulting engineers.

Kippewa, Que.—J. R. Booth, Ltd., 6 Booth street, Ottawa, Ont., manufacturer of bond and other writing papers, newsprint, kraft papers, etc., has completed plans for a new sawmill at its pulp wood properties at Tee Lake, Gordon Creek district, near Kippewa, consisting of a main one-story structure and auxiliary buildings, including handling facilities. Entire project is reported to cost close to $100,000, including machinery. Work is scheduled to be placed under way at once, and will be carried out by day labor. Company will also construct a new three-story addition to mill at Ottawa, about 40 x 170 feet, as lately noted in these columns, reported to cost in excess of $150,000, including machinery.

New Companies

Waterford, Conn. — The Paper Reclamation

Corporation, Quaker Hill, Waterford, has been incorporated with capital of 100 shares of stock, no par value, to operate a plant for utilization of waste paper for paper mill service. Robert S. Long is president; Allen J. Nedeau, Bellows Falls, Vt., is secretary and treasurer.

Los Angeles, Calif.—Star Pull Milk Bottle Caps Company has filed notice of organization to manufacture paper caps for milk bottles and allied specialties. George C. Ervine, 820 South Gage avenue, Los Angeles, heads the company.

Crystal Tissue Holds Christmas Party

[FROM OUR REGULAR CORRESPONDENT]

The 11th annual Christmas party of The Crystal Tissue Company, Middletown, Ohio, took place Friday evening in the Amanda School Auditorium. Over 600 employees and their families were present to enjoy an evening of good-fellowship and to hear the annual Christmas message of Crystal's president, E. E. Grant. Santa's visit to the children was the highlight of the evening following a fine entertainment program featuring Mr. Platt and his dummy pal Joe.

Mr. Grant in his speech reviewed the progress of the company during the past year and the prospects for the future. Mr. Grant stated, "We cannot pass up this opportunity to inform you that Crystal employees are still breaking records and at present we expect to reach the all time high yearly production of 25,000,000 lbs. This can only be attributed to full time operations, constant maintenance of machinery, forethought in purchasing, constant checking on sales and a fully coordinated effort in both mill and office. December marks the 31st consecutive full time month of operation without any lost time. "This record, it may be said, can only be tied by one other industry in the Valley and that, too, happens to be a paper mill."

Extra compensation to all employees, averaging 6½% of their year's earnings was distributed on Thursday the 18th. In this connection Mr. Grant said in his speech: "Crystal families are represented in the armed forces of our country and Crystal employees have left our company to respond to the call to arms. We are sympathetic with the families of these young soldiers of democracy and hope and pray for their safety. Each of these employees now in service received his extra compensation based on his 1941 employment as a remembrance that we have not forgotten him and will keep our pledge to employ him at our mill on his return, if he is capable and desires to resume employment with us."

Capital Paper Co. Holds Sales Meeting

[FROM OUR REGULAR CORRESPONDENT]

INDIANAPOLIS, Ind., January 5, 1942—The Capital Paper Company here held its annual sales convention last week at the Hotel Lincoln. Managers and their salesmen from branch houses in Ohio, Illinois and Kentucky attended. C. V. Jewell, sales manager and vice president, presided at the meetings. Speakers included K. C. Duncan, auditor, on "Credits and Finance;" Louis Lurie, head of the purchasing department, "Difficulties in Getting Merchandise," and Neal Nash, of the Nekoosa Paper Company, Ft. Edwards, Wis., who spoke on general conditions in the industry. The annual banquet was held the final evening.

Blade Fits the Roll

Like Paper on the Wall

The patented "Floating Blade Principle" of the Lodding Doctor develops the maximum flexibility of the thin blade used, thus it naturally (not forcefully) contacts and thoroughly cleans the full width of the roll. Since there is almost no pressure against the roll, friction drag can be considered "null" and power consumed "void." . . . May we send more information or one of our engineers to "talk it over"? Write either the Lodding Engineering Corporation, Worcester, Mass., or the W. E. Greene Corporation, Woolworth Building, New York.

LODDING

FOR EVERY *Doctors* POSITION

FINANCIAL NEWS

New York Stock Exchange

High, Low and Last for Week Ending January 7, 1942

	High	Low	Last
A. P. W.	1⅜	¾	1⅛
Armstrong Cork Co.	25½	20¾	25
Celotex Corp.	8⅛	7⅜	7⅞
Celotex Corp., pf.	72½	70¾	71½
Certain-Teed Products Corp.	2½	1⅝	2½
Certain-Teed Products Corp., pf.	27¾	23½	26¼
Champion Paper & Fibre Co.	16	14¾	16
Champion Paper & Fibre Co., pf.	98½	97	98½
Congoleum-Nairn Co.	15¾	14⅛	15¾
Container Corp. of America	13½	12⅝	13
Continental-Diamond Fibre Co.	8	7⅛	7¾
Crown-Zellerbach Co.	11⅜	10¼	11¼
Crown-Zellerbach Co., pf.	84	84	84
Flintkote Co.	10	9	9⅝
Robert Gair	2⅜	1½	2¼
Robert Gair, pf.	11	10½	10½
International Paper Co.	15¾	14⅛	15
International Paper Co., pf.	60⅜	57	59¼
Johns-Manville Corp.	57¾	55¼	57½
Johns-Manville Corp., pf.	124	124	124
Kimberly Clark Corp.	29¼	28⅝	28⅝
MacAndrews & Forbes.	21⅜	21⅛	21⅞
MacAndrews & Forbes, pf.	....	....	....
Masonite Corp.	26¾	25½	26¾
Mead Corp.	6½	5⅜	6
Mead Corp., pf.	54⅜	54⅜	54⅜
Paraffine Companies, Inc.	23	22	22½
Paraffine Companies, Inc., pf.	98¾	98¾	98¾
Rayonier, Inc.	10⅝	9½	10
Rayonier, Inc., pf.	23¾	23	23¾
Ruberoid Co.	18½	17	17
Scott Paper Co.	34½	32¾	34½
Scott Paper Co., pf.	107	107	107
Sutherland Paper Co.	19¼	18⅜	19¼
Union Bag & Paper Corp.	9¼	8	8⅞
United Paperboard Co.	3⅞	3⅛	3¾
U. S. Gypsum Co.	45¼	41½	44¾
U. S. Gypsum Co., pf.	173½	170	170
West Virginia Pulp & Paper Co.	17½	16¼	17⅜

New York Curb Exchange

High, Low and Last for Week Ending January 7, 1942

	High	Low	Last
American Box Board Co.	3½	3⅜	3½
Brown Co., pf.	....	....	....
Great Northern Paper Co.	32¼	32¼	32¼
Hummel-Ross Fibre Corp.	5½	4⅜	5½
National Container Corp.	9⅝	9	9⅝
St. Regis Paper Co.	2	1¾	2
St. Regis Paper Co., pf.	116¾	112	116¾
Taggart Corp.	2⅜	1⅞	2⅜

West Virginia Nets $3.70

Net earnings of the West Virginia Pulp and Paper Company and its subsidiaries amounted to $4,270,312, compared with $3,670,621, and after providing for deferred dividend were approximately $3.70 a share on 902,432 shares of common stock, against $3.03 a share.

Net sales of the company increased 28% in the year ended on Oct. 31 to $47,520,918 from $36,964,930 sales for the previous year, Thomas Luke, president, informed stockholders in the annual report announced yesterday.

Provision for Federal income and excess profits taxes were $2,200,000, against $728,400.

Arrangements were completed since the close of the fiscal year whereby $1,500,000 of 3% first mortgage bonds were called for redemption on February 2, the report disclosed.

Southern Advance Earns $2.51

The Southern Advance Paper Bag Company for the eleven months to November 30, reports a net income of $589,229, equal to $2.51 each on 166,600 shares of common stock after allowing for preferred dividend requirements. This compares with $615,029 or $2.66 a common share, for eleven months of 1940.

P. H. Travis Heads Rochester Paper Co.

DETROIT, Mich., January 5, 1942—The directors of the Rochester Paper Company of Rochester, Mich., announced the election of Paul H. Travis, of Detroit, as president and treasurer of the corporation.

Travis, who was recently elected to the board of directors, succeeds to the office held by the late Robert E. Rudd, one of the founders of the firm.

Rochester Paper Company is the fourth largest manufacturer of blotting paper in the United States and has sales outlets throughout the nation.

The new president was for many years affiliated with the Sales Division of Woodall Industries, Inc., until 1933, when he organized Diversified Products Company, which remains under his management and is now devoting almost full time to defense work.

Albany Felt Co. Pays Bonus

[FROM OUR REGULAR CORRESPONDENT]

ALBANY, N. Y., January 5, 1942—Announcement is made by the Albany Felt Company of the distribution of $55,000 as a Christmas bonus to its 800 employees. Only recently in September the company also established a six per cent wage bonus which is paid weekly. The Christmas bonus was based on percentage of the earnings over the past year. The concern is now operating at capacity with indications that these schedules will be observed indefinitely.

United Paperboard Advances Wages

The United Paperboard Company, Lockport, N. Y., manufacturer of solid manila boards and other paper board products, has advanced wages of employees at the mill 5 cents an hour, retroactive to December 1, 1941. This is covered in a new contract made by the company and the local branch of the International Brotherhood of Papermakers (A.F.L.) which also provides for a week's vacation for workers with pay and a union shop.

Nashua Paper Pays Dividend

[FROM OUR REGULAR CORRESPONDENT]

Directors of the Nashua Gummed & Coated Paper Company declared a special dividend of $3 a share, payable December 26 to stockholders of record December 22. This brings 1941 payments to $5 a share compared with $4.50 in 1940.

Brown Co. Pays Off Loan

[FROM OUR REGULAR CORRESPONDENT]

The Brown Company has paid $2,211,963 to the city of Berlin, N. H., representing money borrowed from the city during the period of reorganization for the purpose of continuing wood cutting activities.

Robert Gair Pays Initial Dividend

The Robert Gair Company, Inc., has voted an initial dividend of 25 cents a share, payable December 30 to common holders of record December 26.

Brunswick Holds Party

BRUNSWICK, Ga., January 2, 1942 — The most delightful Christmas party since they were inaugurated by the Brunswick Pulp and Paper Company four years ago was staged at the Ritz theater on the morning of December 24 when an unusually fine program was rendered and all received appreciated gifts. The theater was packed with employees of the plant, their families and a number of invited guests.

The program was opened with greetings by E. J. Gayner, vice president and general manager of the plant, who told the employees, their families and guests how delighted he was that so many were present, then followed the singing of the Star Spangled Banner.

I. M. Aiken, chairman of the Glynn county committee which is conducting the sale of defense bonds and stamps, made a short talk, in which he appealed to those present to purchase the government securities.

Then followed a most delightful entertainment program, beginning with animated cartoons and a variety show under the direction of Jimmy Thomas, of the Mayflower hotel, Jacksonville, who acted as master of ceremonies.

Among the entertaining features were Joann Ryder in a military novelty; Ace Newton, in a rhapsody of ropes; Houten and Houten, in a fine trick bicycle act; Professor Backwards, "the Wrong-Way Corrigan of the stage; Vera Ortegus, tops in taps; Lavine and Mae, in "balance at its best," and Jimmy Thomas, in songs, snuff and such.

"Novelties on the Hoof," by Horace Horse, was one of the decided features, in which a well trained horse played a prominent part.

And then came the delight for the many youngsters who were present, Santa Claus in person. Music for the entertainment was under the direction of Dave Bowers.

At the conclusion of the program presents were distributed. Every family received a ham and a box of candy, while various other presents were given the visitors. The entire program was enjoyed by the large number of people present.

At 1 o'clock in the afternoon the company repeated the party for the colored employees and their families at Risley colored school. Practically the same program was carried out.

MANHATTAN RUBBER helps the flow of *Steel* into a thousand shapes—for Defense ★ ★ ★

The sparks and the glow and the lurid liquids that flow from furnace and ladle are the climax of grandeur in the saga of steel.

This molten spectacle is but one scene in the drama of metallurgy where rubber plays a varied role.

MANHATTAN makes hundreds of products which help shape billet and bloom to the needs of Man as well as of Mars.

Ore and coal, coke and limestone travel from mine and quarry on rubber conveyor belts; air and water and steam are borne through rubber hose; parts are welded, sand-blasted, pickled and plated with the aid of rubber. These and an astonishing list of other products—like abrasive wheels for snagging and cutting off, and asbestos brake lining for cranes and hoists—are part of what MANHATTAN makes for the Steel Industry under the banner of Defense.

A few MANHATTAN Products used by the Steel Industry

Conveyor Belts, Mildew-proof
Rubber Belting
V-Belts
Hose for Acid, Air, Chemicals, Sand-Blasting, Steam, Water and Welding
Fire Hose
Furnace Door Hose
Rubber-Lined Pickling and Plating Tanks
Rubber Covered Rolls
Abrasive Wheels
Brake Lining, Clutch Facings
Asbestos Cable Covering
Asbestos Products
Molded Goods and Packing
Rubber Pipe

A typical Manhattan conveyor belt installation in the steel and allied industries.

KEEP AHEAD WITH MANHATTAN

THE MANHATTAN RUBBER MANUFACTURING DIVISION
of RAYBESTOS-MANHATTAN, INC.
EXECUTIVE OFFICES and FACTORIES • • • PASSAIC, NEW JERSEY

Not Pacific Mills Ltd.

J. A. Young, vice president and treasurer of Pacific Mills Limited, writes as follows:—

"On page 18 of the PAPER TRADE JOURNAL, issue December 18, 1941, there is an article headed 'Complain against Pacific Mills'. As you are probably aware, Pacific Mills Limited is a Canadian corporation, operating pulp and paper mills at Ocean Falls and have no connection whatsoever with the Pacific Coast Paper Mills Inc., at Bellingham, Wash.

"The article itself is quite clear, but the heading might be misleading and we would suggest that some correction of this be made in an early issue."

PAPER
TRADE JOURNAL
Title Reg. U. S. Pat. Off.
Henry J. Berger
EDITOR
Vol. 114 January 8, 1942 No. 2

COMING EVENTS IN PAPER INDUSTRY

AMERICAN PAPER AND PULP ASSOCIATION, Sixty-fifth Annual Convention and meeting, Waldorf-Astoria Hotel, New York, February 16-20.

TECHNICAL ASSOCIATION OF THE PULP AND PAPER INDUSTRY, Convention, Commodore Hotel, New York, February 16-19.

SALESMEN'S ASSOCIATION OF THE PAPER INDUSTRY, Annual Meeting and Luncheon, Waldorf-Astoria Hotel, New York, Tuesday, February 17.

NATIONAL PAPER TRADE ASSOCIATION OF THE UNITED STATES, Convention, Waldorf-Astoria Hotel, New York, February 16-19.

THE NEW YORK ASSOCIATION OF DEALERS IN PAPER MILLS' SUPPLIES, Annual Banquet, Commodore Hotel, New York, Tuesday, February 17.

NEW ENGLAND SECTION. Technical Association of the Pulp and Paper Industry—Third Friday of each month at the Roger Smith Hotel, Holyoke, Mass.

DELAWARE VALLEY SECTION. Technical Association of the Pulp and Paper Industry—First Friday of each month at the Engineers Club, Philadelphia, Pa.

LAKE STATES SECTION. Technical Association of the Pulp and Paper Industry—Second Tuesday of each month at the Conway Hotel, Appleton, Wis.

KALAMAZOO VALLEY SECTION. Technical Association of the Pulp and Paper Industry—First Thursday of each month at the Park, American Hotel, Kalamazoo, Mich.

BUSINESS ON A WAR FOOTING

With the declaration of war by the Axis powers on the United States, plans for the transition of the entire resources of the country from a peace to a war basis have been speeded up. Severe strains, dislocations and sacrifices must be inevitably experienced in some degree by all citizens and business concerns. But the great task and duty of protecting our country must be well done and there is no reason to feel alarmed at the prospect of matching our great total resources against the best which the opposing forces can possibly offer. We are better able to withstand the heavy pressure of a world-wide conflict than any other nation and the economic changes affecting business and everyday activities are by no means discouraging in the circumstances. War is a grim business and a grim determination is necessary to deal with all the aspects of the conflict.

The advent of total war between the United States and the Axis powers finds this nation well advanced on the road to complete preparedness, with its emergency powers organized and functioning, its incomparable productive strength greatly increased and still expanding swiftly in the necessary directions, and its people exhibiting a new spirit of unity and determination to work together in meeting and overcoming the common danger, states the Guaranty Trust Company of New York in the current issue of *The Guaranty Survey*, its monthly review of business and financial conditions, published on December 29. "Any dislocations or hardships that may be occasioned by the enormous cost of modern warfare are of secondary importance beside the supreme task that now confronts the nation," *The Survey* continues. "That task is, to a great extent, an economic one: to make industry and finance, producer and consumer, employer and employee, contribute their utmost to our military strength and that of our Allies. In facing this task, the American people have three enormous advantages: they know what they are fighting for; they are a united people, and they are keeping their heads. To translate these elements of strength into maximum tangible contribution to the common cause will be the primary concern of business in the year ahead."

In commenting on outstanding developments *The Survey* says in part: "The progressive shift during the year from a peace-time to a wartime economic basis has been punctuated by several outstanding developments that have lent impetus to the movement. The inauguration of the lend-lease system made it certain that our shipments of war supplies to the nations resisting the Axis would continue to increase as swiftly as our industries could expand their output, and at the same time removed this large and growing section of our foreign trade from the ordinary commercial channels . . . The outbreak of war has climaxed a year in which the influences of military activities on economic life has become steadily broader and more powerful. The last twelve months have witnessed the transition from a state of limited national emergency to one of open belligerency. The momentum of our defense program and the scope of our aid to foreign governments resisting aggression have increased without interruption and have forced industry, commerce and finance into ever closer conformity with the now very rapidly developing national effort."

Commenting on the effects on business, *The Survey* states in part: "The principal effect of these developments on business has been to force drastic readjustment. The task of diverting the possible part of the country's industrial power in the shortest possible time is one of enormous magnitude, and one that affects every branch of business, whether directly related to national defense or not. In some cases this shift bas brought severe hardship, and throughout the business structure it has necessitated the temporary relinquishment of the freedom of initiative that is one of the cherished traditions of American life. But these surrenders and sacrifices have been willingly made, and in more than a few instances voluntary compliance with official requests has brought such satisfactory results that compulsory measures have been deemed unnecessary. The establishment of numerous price ceilings, for example, has been indefinitely postponed because of voluntary acceptance of official requests; and since our entry in to the war labor organizations have cancelled strike orders and affirmed their determination to avoid further walkouts in strategic industries."

Referring to other results of rearmament *The*

Survey says in part that, "In foreign trade, even more than in domestic business, expansion due to war requirements has been offset by shrinkage in other directions. Our trade with continental Europe has been almost non-existent throughout the year, and the same condition existed in our trade with Japan for some time prior to the outbreak of war with that nation. To an even greater extent than last year, our trade has been sustained by the exchange of strategic war materials with a comparatively small number of countries. The only important division of our foreign trade representing a partial exception to this tendency has been that with the other countries of the Western Hemisphere, and even in that area the volume and composition of our experts have become increasingly subject to centralized control dictated by strategic considerations."

In expressing the opinion that trade has been thus far little disturbed, *The Survey,* points out that, "Readjustments necessitated by war production are creating a new set of depressed or 'stranded' areas similar to those which arose during the great depression, according to Paul V. McNutt, Federal Security Administrator. Mr. McNutt told a Senate committee this month that surveys conducted by his office indicate that between 1,000,000 and 1,500,000 persons will be victims of 'priority unemployment' within a short time. He described these figures as 'net', that is, as excluding those who will be thrown out of employment only temporarily and will be able to find work in other lines."

Roll Newsprint Consumption

Cranston Williams, general manager of the American Newspaper Publishers Association, 370 Lexington avenue, New York, has sent the following self explanatory letter to all newspapers in the United States:—

"The attached confidential questionnaire "Roll Newsprint Consumption in 1941 and Estimate for 1942" is being mailed today to all daily newspapers in the United States, irrespective of membership in the ANPA or any other association.

"It is essential that information be compiled at an early date on newsprint consumption in rolls (not flat) in 1941 and an estimate of newsprint expected to be used in 1942. This can only be accomplished through the cooperation of every daily United States newspaper. Will you please see that the enclosed questionnaire is filled out and returned promptly to the ANPA? You may rest assured only a consolidated report based on replies received will be published and no use will be made of any individual figures.

"If you are supplied from more than one mill the tonnage you consumed in 1941 should be broken down so as to show the amount received from each mill.

"All newspapers reporting will be furnished with copy of bulletin showing the consolidated report."

Production Ratio Report*

(Production as per cent of six-day capacity)

COMPARATIVE WEEKLY SUMMARIES

Current Weeks, 1941		Corresponding Weeks, 1940	
November 22	105.3	November 23	84.7
November 29	107.5	November 30	84.4
December 6	107.0	December 7	85.3
December 13	105.7	December 14	88.3
December 20	107.0	December 21	88.5
December 27 (Prelim.)		December 28	61.4
(Holiday Week)	*80.0*		

COMPARATIVE MONTHLY SUMMARIES

Year	Jan.	Feb.	Mar.	Apr.	May	June	July
1940	89.1	84.7	82.3	84.3	90.0	92.1	85.3
1941	85.6	89.7	92.2	96.0	98.7	99.5	94.8

Year	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1940	85.1	81.5	85.5	84.9	80.9	85.6
1941	101.8	99.6	105.1	*106.1*	...	...

COMPARATIVE YEARLY SUMMARIES

	1935	1936	1937	1938	1939	1940	1941
Year to Date..	69.9	80.4	79.8	71.5	83.4	85.6	*97.4*
Year Average.	69.9	80.4	79.8	71.5	83.4	85.6	...

* Based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available. Does not include mills producing newsprint exclusively.

PAPERBOARD OPERATING RATIOS †

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1936	62	67	67	70	69	70	69	75	78	82	80	74	72
1937	80	86	86	88	85	77	66	74	69	65	55	45	73
1938	54	60	61	57	58	56	57	66	66	70	65	59	61
1939	60	67	71	69	64	67	63	72	74	84	81	71	70
1940	71	70	69	70	76	79	72	74	72	79	77	71	73
1941	75	81	82	83	84	88	86	94	94	99	*98*	..	..

Week ending Nov. 22, 1941— 96
Week ending Nov. 29, 1941—101
Week ending Dec. 6, 1941—102
Week ending Dec. 13, 1941—101
Week ending Dec. 20, 1941—101
Week ending Dec. 27, 1941— *76*

† Per cents of operation based on "Inch-Hours" reported to the National Paperboard Assn.

Gilman Mill Subscribes 100 Per Cent

ST. JOHNSBURY, Vt., January 5, 1942—Evidence that the working men of Vermont as elsewhere are going the limit to support the government in its defense savings plan was illustrated by a report from the office of State Administrator Fred C. Martin, showing that the employees of the Gilman Paper Company at Lunenburg, had subscribed 100 per cent.

In making his report to Administrator Martin, Benjamin Kimball, manager of the organization, pointed out that of the 512 employees, every one volunteered to buy bonds on the installment plan, and the weekly allotment will be about six per cent of the pay roll. According to Mr. Kimball, not only was no difficulty experienced in getting signers but also the men were axious to subscribe with the understanding that not only are they supporting the government in its war plans but at the same time are providing themselves a method for systematic saving.

This is the largest plant in the state to achieve a complete 100 per cent showing, although the American Woolen Company in Winooski is very close to that mark, Martin said.

H. S. Dennison Named to Reserve Bank

BOSTON, Mass., January 5, 1942—Henry S. Dennison, president of the Dennison Manufacturing Company, of Framingham, has been named deputy chairman of the Federal Reserve Bank of Boston by the board of governors of the Federal Reserve System, according to an announcement January 1 by R. A. Young, president of the Boston bank.

A BIRTH CERTIFICATE BUILT IN

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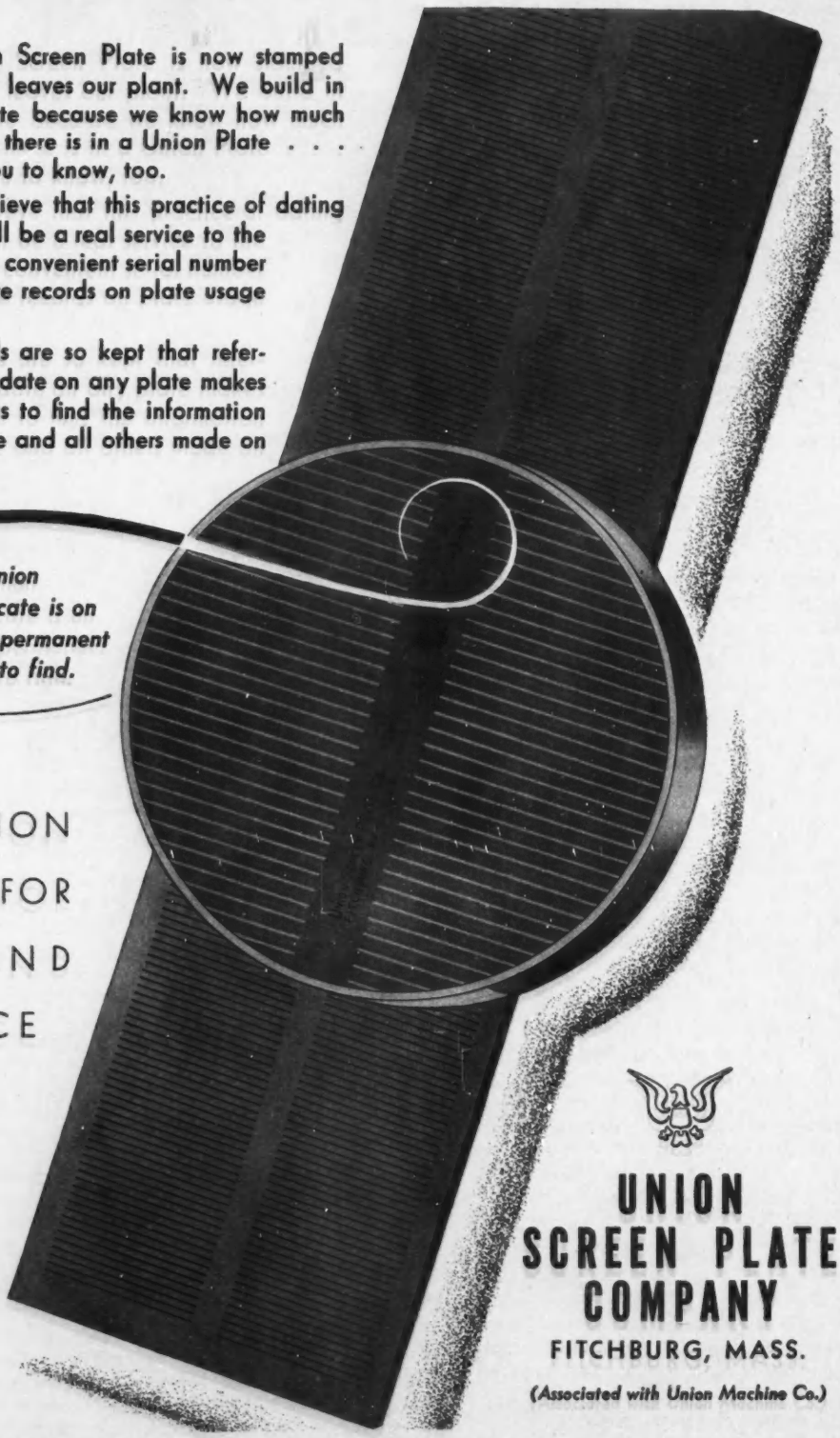
And we believe that this practice of dating Union Plates will be a real service to the mill. It makes a convenient serial number for more accurate records on plate usage and life.

Our records are so kept that reference to just the date on any plate makes it possible for us to find the information about that plate and all others made on the same order.

The Union Birth Certificate is on every plate, permanent and easy to find.



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UNION SCREEN PLATE COMPANY

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(Associated with Union Machine Co.)

Southern Representative, Gene Bechard *Mid West Representative,* J. M. Ward *Pacific Representative,* Pacific Coast Supply Co

Section of the
Technical Association of the Pulp and Paper Industry

Edited by Ronald G. Macdonald, Secretary

Some Aspects of the Chlorination of Sulphite Pulp

By N. W. Coster[1] and R. I. Thieme[2]

Abstract

Data are presented for the chlorination of unbleached western hemlock sulphite pulp at temperatures of 5, 15 and 30 deg. C. and chlorine additions of 35, 50 and 65% of demand. Comparative data for three bleaching methods of chlorination—i.e., using gas, hypochlorous acid, and a combination of gas and calcium hypochlorite—are given.

Based on data taken in the mill, calculations are made showing that when neutralizing washed chlorinated pulp with sodium hydroxide, an amount of organic material is dissolved equal to more than 10% of the amount dissolved in the original chlorination.

What takes place when elementary chlorine as gas or chlorine water reacts with the lignin or lignosulphonic complex of an unbleached sulphite pulp? We might just as well admit that we do not exactly know, since we know neither the exact structure of the lignin molecule nor the exact part of it that reacts with the chlorine. The presence of certain characteristic groups in the lignin structure is generally accepted, and it is upon the basis of these known groups that the theories of chlorination are founded.

Under conditions where elemental chlorine is the active agent there are several possibilities as to the nature of the reaction involved. The reactions which result in the formation of the soluble lignin compounds will fall into two classes, namely, substitution and addition.

Indications point to the fact that the majority of the reaction is one of substitution, although there is considerable difference of opinion on this matter in the literature *(1, 2, 3)*. Judging from the amounts of hydrochloric acid produced, that we have found when chlorinating pulp, a reaction of substitution must predominate, although it cannot be shown that it exists alone. The principal consideration regarding these two types of reactions is their end products. In the case of substitution, hydrochloric acid is produced in an amount exactly equal to one half the chlorine added. (This is true too in the case of oxidation, hydrochloric acid being produced in an amount equal to the chlorine added.) In the case of addition, all of the chlorine is taken up by the lignin and no hydrochloric acid is produced.

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The precise manner in which these reactions occur is not known. The addition reaction most certainly involves the unsaturated portions of the lignin molecule. On the other hand, the substitution reactions may involve the methoxyl groups, hydroxyl groups, or the aromatic nucleus of the molecule. Brauns *(4)* indicates the presence of an extremely reactive hydroxyl group which is of controlling importance in the chlorination reaction. Additional investigation along this line will no doubt give much valuable information.

Effect of pH

A consideration of the fundamental reaction between chlorine and water shows the following:

$$\begin{array}{ccccc} Cl_2 & + & H_2O & \rightleftharpoons & HOCl + HCl \\ & & & & \downarrow\uparrow \quad \downarrow\uparrow \\ & & & & OCl^- + H^+ \quad H^+ + Cl^- \end{array} \qquad (1)$$

Below a pH of 2 elementary chlorine is present substantially alone. From pH 2 to 5 the amount of hypochlorous acid increases until it is present 100% at a pH of approximately 5. From this point upward the concentration of hypochlorite ion becomes greater until at pH 9 and above it predominates *(1, 2, 5, 6)*.

The hypochlorite ion of course cannot be considered a factor in chlorination as its reaction is of an oxidizing nature, and we have therefore to limit our field of chlorination reactions to a pH of 5 or less.

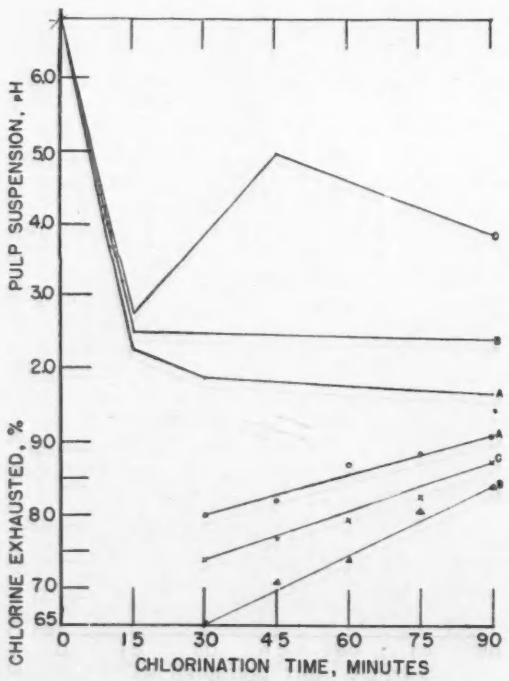
Hypochlorous acid, prepared in one way or another, has been used for a number of years by several mills as chlorinating agent, and it might be of interest to compare the effect that chlorination with these two reagents has upon pulp quality as measured by certain physical and chemical tests. For this comparison we list in Table I the results obtained when treating the same kind of pulp in three different ways: (A) With elemental chlorine (chlorine gas). (B) With hypochlorous acid made from chlorine, water, and limestone. (C) With hypochlorous acid in "its state of liberation", a patented process *(7)*. The latter is produced by first adding a small amount of chlorine gas to the pulp suspension and after the chlorine has been exhausted, calcium hypochlorite solution is introduced at such a rate of flow that the hydrochloric acid formed by the reaction between the lignin and the chlorine gas breaks the hypochlorite down immediately into hypochlorous acid. In other

TABLE I.—COMPARISON OF CHLORINATION TREATMENTS

		Method A	Method B	Method C
Chlorine added, lb./ton pulp		68	68	68
Chlorine absorbed, lb./ton pulp		62	57	59
Temperature of pulp suspension, deg. C.		14–15	14–15	15–16
Chlorinating time, minutes		90	90	90
Pulp consistency, % airdry		3.0	3.0	3.0
Caustic used for neutralizing, lb./ton pulp		65	27	10
pH at end of chlorination		1.7	2.4	3.9
pH at end of neutralization		7.1	7.2	7.4
TESTS ON CHLORINATED PULP				
Brightness		61.7	57.2	64.8
Bleachability, % Cl2		0.4	0.6	0.5
Cuprammonium viscosity, c.p.		83	81	75
1% NaOH solubility, %		13.6	14.0	15.2
	Beating, minutes			
Burst	5	42	38	39
	35	82	81	78
	65	102	99	96
Tear	5	227	221	248
	35	164	174	168
	65	147	154	138
Freeness	5	880	880	870
	35	810	820	800
	65	630	700	620

words, the pH is at all times 5 or less, and we have hypochlorous acid in its state of liberation as the reagent that brings the lignin into solution. Under these conditions the hypochlorite ion does not act as an oxidizing agent but in a manner similar to elemental chlorine—i.e., the reaction appears to be largely substitution and addition. Referring to Fig. 1 Method C, after 45 minutes, although there is a decrease in pH it is not sufficient to account for an oxidizing reaction. It is believed that if the reaction had been one of oxidation alone the resultant pH would have approached that of chlorination with gas alone.

The pH of the pulp suspensions and the chlorine exhaustion rates of the three different procedures are shown in Figs. 1 and 2. Some of the other data from chlorination by these three different methods and some tests on the chlorinated pulps are shown in Table I.



FIGS. 1 AND 2

An examination of these data shows that the reaction is the fastest when using chlorine gas, and the pulp produced has the lowest bleachability. The chemical and physical tests on the chlorinated pulp indicate that slightly stronger pulp is obtained when using chlorine gas than when using hypochlorous acid. However, the differences shown are so small that they lie within the experimental error and therefore do little more than show a trend.

Of the two hypochlorous acid methods (B and C), Method C, using the same in "its state of liberation" is to be preferred because it not only produces the best pulp but works at a pH where no special precautions for acid resistance have to be taken. It has been used for a number of years with great success in a mill where the chlorinating cells were lined with ordinary tile and no special arrangements were made to protect metal parts (as agitators, shafts, valves, etc.) coming into contact with the chlorinated pulp.

Effect of Consistency

The experimental chlorinations referred to in this paper have all been carried out at a consistency of 3% for convenience. The mill operations referred to are conducted at a consistency of 3% to 4%. It is necessary that the chlorine and the pulp be brought rapidly into contact with each other, and this cannot be done in mill operations, with the equipment available at present, at much higher consistencies than those mentioned above. Therefore we have not presented any data for the effect of consistency, especially since it has already been proved that chlorination over a wide range of consistencies has no effect on the pulp produced *(3)*.

Effect of Time

Time as a factor in batch chlorination is shown in Table II concerning chlorine exhaustion. Thirty minutes represents the gas introduction period and was chosen to simulate actual operating conditions. We find that in mill practice the period of introduction will vary from 20 to 30 minutes depending upon the amounts of chlorine involved. However, 30 minutes represents a reasonable time.

It is significant to note the high percentages of chlorine consumption during the period of addition. This substantially checks the work of other investigators *(8)*, although a direct comparison is probably not possible. The most efficient time for chlorination treatment is dependent on several factors. Practical considerations of pulp production make prolonged chlorination periods unfeasible. In plant operation a time (total) of 45 to 60 minutes is the most suitable one. This allows for the exhaustion of 90% to 95% of the chlorine even at fairly high chlorine concentrations, and yet does not necessitate extensive equipment. Since there is a strong possibility that during the latter part of the chlorination a large part of the reaction involves the already dissolved chlorinated products, little benefit can be derived from allowing extra time for complete chlorine exhaustion.

Effect of Temperature

Referring to Table II it will be noticed that the chlorination experiments were made at temperatures of 5, 15 and 30 deg. C. An inspection of these results reveals that the effect of temperature is as follows:

TABLE II.—TREATMENT OF UNBLEACHED SULPHITE PULP WITH ELEMENTAL CHLORINE

Batch Number	1	2	3	4	5	6	7	8	9
Cl_2 used (% of total)	35	50	65	35	50	65	35	50	65
Temperature, deg. C.	5	5	5	15	15	15	30	30	30
Consistency, % airdry	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Exhaustion, % After, minutes									
30	92.7	85.4	77.3	92.7	85.2	80.7	92.4	90.6	85.9
45	92.7	88.9	81.2	93.3	89.7	82.3	93.2	92.4	92.8
60	92.7	90.5	83.7	93.8	91.6	87.1	94.7	93.5	95.9
75	92.7	92.4	84.5	93.8	92.4	88.3	95.2	94.1	97.1
90	93.3	92.9	86.3	94.6	93.5	90.7	95.5	95.3	97.4
pH									
15	2.2	1.9	1.9	2.7	2.1	2.3	2.4	2.1	2.0
30	2.1	1.9	1.9	2.1	1.8	1.9	2.1	1.9	1.9
45	2.1	1.9	1.9	...	1.7	...	2.1	1.9	1.9
60	2.1	1.9	1.9	1.9	1.7	1.8	2.1	1.9	1.8
75	2.0	1.9	1.9	1.9	1.8	1.8	2.1	1.9	1.8
90	2.0	1.9	1.8	1.9	1.8	1.6	2.1	1.9	1.8
Burst Beating, minutes									
5	37	36	41	41	42	40	37	38	40
35	78	80	84	87	85	82	82	85	85
65	95	99	100	100	100	102	105	103	103
Tear									
5	269	272	258	229	216	227	234	246	258
35	187	181	163	171	174	164	169	178	178
65	160	152	149	156	144	147	144	157	148
Freeness									
5	870	870	870	870	870	870	870	870	870
35	810	810	800	790	810	810	790	810	810
65	640	620	630	600	610	630	550	600	600
Brightness G.E.	48.3	55.8	60.5	43.9	56.1	61.7	48.2	56.1	59.3
Bleachability, % Cl_2	1.5	0.7	0.5	1.5	0.7	0.4	1.5	0.7	0.4
Viscosity, C.P.	104	94	88	109	99	83	108	99	75

A. Chlorine exhaustion is more complete at higher temperatures, although the effect is not pronounced with an addition of 50% of demand or less.

B. The pH conditions are unaffected. The variations shown fall within the experimental errors of determination.

C. The physical properties of the pulp are not greatly affected by temperature variation.

D. Viscosity is the only chemical property of the pulp which shows a decided trend with chlorination temperature. Values decrease with an increase in temperature at the higher chlorine concentration, showing that the higher temperatures cause some attack on the cellulose. Since other features of the pulp manufacturing process have a greater effect on the physical properties than chlorination temperature, it is impossible to show any variations from this source on a plant scale.

Naturally bleach plant operations in the mill will not be subject to the variables in temperature used in these experiments, however, excluding bleachability it is our biggest single variable. The following data are the result of a large number of determinations showing the effect of winter and summer conditions upon chlorine exhaustion rate:

Temperature deg. F.	Bleachability	Exhaustion (45 min.), %
50	4.7	92.0
70	4.9	92.8

It is to be seen that there is practically no change in conditions due to temperature, and as previously mentioned, the effects are of such small magnitude that they are overshadowed by more important variables in the pulp making process. The minimum temperature of 50 deg. F. for winter conditions was maintained by the use of steam, and our operating data indicate that it should not be much lower. Numerous tests made over a period of years in our bleach plant show an excellent correlation between experimental results and full scale operations. Average exhaustions for comparable chlorination periods check within 5%.

Effect of Chlorine Concentration

Chlorine concentration is the controlling variable in the chlorination process. Values found for additions of 35, 50, and 65% of the chlorine demand of the pulp show particularly wide variations in bleachability, brightness, and viscosity. It is of particular interest to note that the strength properties are but little affected by these wide variations in chlorine addition. One of the early objections to the use of elemental chlorine lay in the belief that the high concentrations of hydrochloric acid produced would cause a degradation of the fibers. We can see here that this idea is wrong, as has previously been shown by other investigators *(2, 8)*.

The question, "how far to chlorinate," is one often asked and of considerable importance. Perhaps the best answer is to say "as much as possible." This is limited by several factors such as size of equipment available, chlorine economy desired, kind of pulp to be treated, and others. However, our experience has been that the chlorinated pulp should have a constant chlorine demand regardless of the bleachability of the unbleached pulp from which it is made. In the subsequent bleaching treatment, not more than 15 pounds of chlorine per ton of pulp should be used to obtain the desired brightness.

Dissolving of Organic Material During Chlorination

As a rule the rate of chlorination is guided by the amount of excess chlorine at the end of the chlorination period, and the bleachability of the chlorinated pulp. Another means for guidance would be to determine the organic material brought into solution during the chlorination process. For this purpose, by using a modification of the methods of Prelinger and Triplett *(9, 11)*, we have followed the amount of organic material brought into solution during the chlorination of unbleached sulphite over a wide variation in bleachability. The amount of organic material brought into solution is represented by the "organic number." This is defined as the number of cc. of 0.125 *N*. potassium iodate consumed by 2 cc. of fiber free liquid drained from the pulp.

The results obtained are shown in Table III. It is of interest to note that the relation final organic number divided by chlorine number of the unbleached pulp is practically constant. This is at is should be, because all of the pulps are chlorinated to a constant bleachability.

From these results it can be seen that little dissolving action takes place after 30 minutes of chlorination. The ratio of increase in organic material does not conform to the ratio of increased chlorine usage during the same period, being smaller. This

TABLE III.—DISSOLVING OF ORGANIC MATERIAL IN COMMERCIAL BATCH CHLORINATION

Bleachability of unbleached pulp, % Cl_2	3.5	4.9	5.3	6.3
Temperature of pulp suspension, deg. F.	68	70	69	65
Organic number				
After 15 minutes chlorination	1.13	2.03	2.16	1.89
After 30 minutes chlorination	1.39	2.22	2.45	2.71
After 45 minutes chlorination	1.47	2.31	2.54	2.82
Ratio $\frac{\text{Organic number after 45 minutes}}{\text{Chlorine number of unbleached pulp}}$	0.42	0.47	0.48	0.45
Bleachability of chlorinated pulp	0.72	0.77	0.72	0.72

indicates that an appreciable part of the reaction involves the dissolved organic matter. However, the increase in organic material, although small, is of definite value and represents the action of the small amount of residual chlorine present during this portion of the chlorination.

Washing of Chlorinated Pulp

Before the equipment manufacturers were able to furnish the industry with washers made from material able to withstand and resist the hydrochloric acid and residual chlorine present in chlorinated pulp, it was necessary to add sufficient alkali to the pulp suspension to produce a pH of at least 7. Due to the large amounts of alkali needed for this reaction it

was necessary to use a fairly inexpensive material in order to keep the cost down. As a result, about the only material available was calcium hydroxide. Phelps and Schuber (*2*) and others have shown that lime together with chlorinated lignin form an insoluble compound that is precipitated on the pulp fibers and cannot be fully removed during further bleaching procedure. Experience from plant operations has proven to us that if lime is used for neutralizing the chlorinated pulp, color reversion of the fully bleached pulp during long time storage is greater than if sodium hydroxide is used for the same purpose. However, now that the industry has washers available made from acid resisting materials, it is not necessary to neutralize the chlorinated pulp before washing.

No matter how efficiently the chlorination has taken place, it will be of little avail if the chlorination products are not preperly removed in the subsequent washing. To do so, it is not only necessary to dilute the chlorinated pulp with white water, which is as pure as practical operations will allow, and run the washer at such speed that a uniform sheet, free from lumps is formed, but to allow the sheet enough time under the showers to give ample time for dispersion.

Unfortunately we have not as yet any efficient testing method by which we can accurately guide our washing operations. The older method of determining the washing efficiency from the chloride content of the feed and cake of a washer is not satisfactory as it does not tell anything about the amount of organic material (chlorinated lignin products) removed in the washing which is what we aim to do. Methods like that of Prelinger (*9*), although not entirely satisfactory, are undoubtedly a step in the right direction. Further investigations along these lines will no doubt be helpful and it is hoped that they will eventually bring forth a method suitable for mill control that will give us a better picture of our washing operations.

We list below some figures showing the effect that the pulp consistency of washer feed has upon washing efficiency according to the two methods mentioned above:

Consistency of Moisture-free Pulp in Vat, %	Washing Efficiency	
	Prelinger Method, %	Calcium Chloride Method, %
2.0	84.3	88.1
1.6	91.2	94.7
1.4	94.7	97.8

These tests were made at a constant washer speed and with the same amount of pulp going over the washer. In other words, the only factor changed was the amount of dilution water used.

Neutralizing the Washed Chlorinated Pulp

Even with the most efficient washing it is impossible to remove the last traces of hydrochloric acid and residual chlorine from the chlorinated pulp. Inasmuch as it is necessary to have the subsequent treatment with hypochlorite take place under alkaline conditions it is desirable to neutralize the chlorinated pulp before the hypochlorite is added to it. It is furthermore generally accepted in the literature (*2*) that a portion of the chlorinated lignin material is not brought into solution under acid conditions, and that this material can be either dissolved or dispersed by alkaline treatment (*7*).

This neutralization can, of course, take place in the same vessel in which the hypochlorite bleaching occurs but, if so, it will be done before the hypochlorite has been added. However, as the hypochlorite would react with these compounds and use up chlorine, it is better to remove them before the hypochlorite bleaching takes place.

By adding a small amount of sodium hydroxide to the chlorinated pulp as it leaves the washer, enough to raise the pH of the pulp suspension to 9, and then leaving it in an agitated chest for approximately one half hour, good results have been obtained.

In order to determine the effectiveness of this treatment we conducted a series of experiments making use of a modification of the fundamental method of Prelinger and Triplett (*10, 11*). By this method a value can be found which represents the amount of organic material present in a solution. Taking samples before and after the neutralizing treatment and evaluating the dilution water, it is possible to measure the increase in organic material present. The data represents the average of three complete determinations:

	Chlorinated Washer Cake	Stock after Caustic Treatment	Dilution Water
Consistency, % of moisture-free	8.44	2.62	.....
Lb. water/lb. moisture-free pulp	10.85	37.16	26.31
Organic number[3]	0.441	0.413	0.031

Evaluating to determine values for stock entering the neutralizing treatment:

(26.31) (0.031) = 0.82 5.61/37.16 = 0.151 Organic number of stock entering neutralizing treatment.

(10.85) (0.441) = 4.79 / 5.61 — 0.413 Organic number of stock leaving neutralizing treatment.

0.262 Difference

Since the consistency is unchanged:

(100)(0.262)/(0.151) = 174% Increase in organic number (the amount of organic material in solution is almost tripled).

Using a consistency of 3.15% moisture-free for the chlorination, at a bleachability of 5%, the organic number at dump time is 2.4 (experimentally determined).

Then (100)(2.40)/(3.15)(1.031) = 73.8 Evaluated organic matter[4] in stock entering chlorinated pulp washer.

In the cake from the chlorinated washer:

(100)(0.441)/(8.44)(1.046) = 5.01 Evaluated organic matter in cake leaving washer.

(5.01)(1.74) = 8.66 Evaluated organic matter dissolved in neutralizing treatment.

(100)(8.66)/(73.8) = 11.7% Amount of organic material dissolved in the neutralizing treatment as compared to the amount dissolved in the chlorination.

Other determinations indicate that these data may be for optimum conditions, however, an average value of approximately 10% will hold. The value of this treatment is quite apparent from a consideration of these figures.

No provision is made for temperature control. The temperature at which the neutralizing treatment is made depends upon the temperature of the washer

[3] Organic number is defined as the number of cc. of 0.125N KIO_3 consumed by the organic material in 2 cc. of liquid.

[4] An arbitrary expression that takes the consistency of the pulp mixture into consideration, thus allowing for the comparison of the amount of organic material in solutions taken from pulp mixtures of different consistencies. Evaluated organic matter = $(\text{Otg. no.})(100)(\text{moist.-free consist})\left(\frac{100}{100 - \text{moist.-free consist.}}\right)$

cake and dilution water. The results shown are derived from data taken at a median temperature of approximately 55 deg. F. Year around mill operation will show a maximum temperature variation of approximately 45 to 70 deg. F. Whether temperature control would result in a sufficient improvement to justify the added cost is a matter for additional investigation.

It would logically follow that if we can show such a definite increase in dissolved organic materials during the neutralizing treatment, then the same effect should be reflected in the bleachability. With this in mind several tests have been made on samples taken in the mill and they showed a definite decrease in bleachability due to the neutralizing treatment. Average value obtained from tests on the same equipment used for the organic matter determinations indicated a decrease in chlorine number of approximately 0.25% (by TAPPI Standard). This represents about 5 pounds of chlorine per ton of pulp, and on this score alone justifies the use of the more expensive sodium hydroxide as a neutralizing agent.

Conclusions

Experimental chlorination results are correlated quite closely in full scale operation. The same can be said of operations using hypochlorous acid. (A) At least 75% of the total chlorine consumption is used up during the period of introduction. (B) Approximately 90% to 94% of the available chlorine provided for the pulp is consumed in a 45-minute period. (C) Final chlorination pH values are in the range 1.5 to 2.0.

Mill operations call for the use of acid resistant equipment, both for chlorination and washing.

A neutralizing treatment of washed chlorinated pulp provides a valuable means for the removal of additional organic materials undissolved in the chlorination. An amount equal to more than 10% of the organic material dissolved in the chlorination treatment can be removed in this fashion.

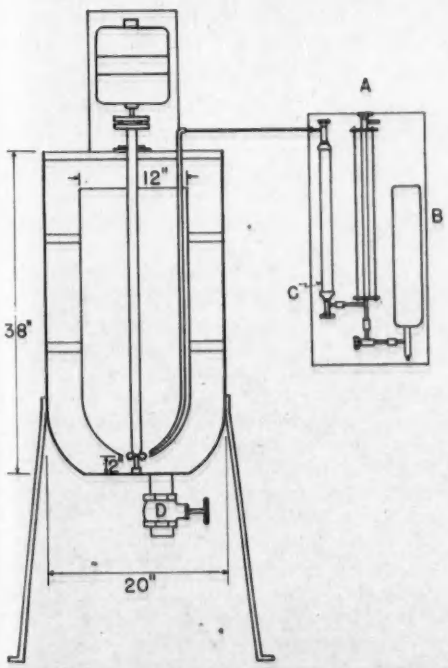


FIG. 3

Experimental Chlorination Apparatus: A—Buret, B—Cylinder, C—Evaporator, D—2-inch gate valve. Scale: ½ inch = 1 inch

Notes on Experimental Bleaching

The pulp used was a strong bleachable sulphite pulp made from western hemlock having a bleachability of 5.24% Cl_2 according to TAPPI Standard T214. At all times the amount of pulp used was 5100 grams, and the pulp consistency 3% air dry. The chlorinating vessel and apparatus for measuring the amount of liquid chlorine required are shown in Fig. 3.

Notes on Testing Methods

The following data describe the tests used, etc.

Beater Processing—According to TAPPI Standard T200.
Forming and Testing of Pulp Sheets—Modification of TAPPI Standard T205.
Principal modification: Sheets are formed on an 8 by 8-inch sheet mold and dried in a current of warm air. The sheet weight is 50 pounds, Burst expressed as pound/pound times 100, and tear as grams/pound times 100.
Viscosity—According to TAPPI Standard T206.
1% NaOH Solubility—According to TAPPI Standard T212.
Modification: A 250 cc. Erlenmeyer flask with an air condenser is used in place of the 200 cc. tall-form beaker.
Bleachability—According to TAPPI Standard T214.
Unbleached Pulp 25 cc. 0.1 *N*. $KMnO_4$
Chlorinated Pulp 10 cc. 0.1 *N*. $KMnO_4$
Residual Chlorine—Meta Bisulphite Method. (Pacific Pulp Paper Ind., January, 1939).
Organic Number—Refer to literature reference (*10*). Determined as follows: Using a large test tube (25mm.), add 2 cc. of $KIO_3 \cdot H_2SO_4$ reagent to an amount of sample (1 to 20 cc.) which will not reduce all of the KIO_3 present. Three glass beads are used in each tube. Tubes are placed in a wax bath and kept at a temperature of 120 to 140 deg. C. until most of the water is evaporated, then heated to 170 deg. C. The tubes are kept at this temperature until a clear solution results. Remove, cool, and add 5 to 10 cc. of distilled water rinsing the sides of the tubes. Replace in the wax bath and hold at 120 to 130 deg. C. until the solution is again clear. Remove, cool, and titrate. Two cc. of 5% $NaHCO_3$ and 5 cc. of 15% KI are added and the liberated iodine titrated with 0.125*N* sodium thiosulphate. Starch is used and the thiosulphate is titrated from a microburet. Usually two blanks are run with each determination.
Solutions: $KIO_3 \cdot H_2SO_4$ reagent. 0.25*N* KIO_3, 400 cc. conc. H_2SO_4/liter 0.125*N* $Na_2S_2O_3$ 15% KI, 5% $NaHCO_3$.

Acknowledgment

The authors wish to express their appreciation to the management of the Soundview Pulp Company for permission to publish this paper.

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TAPPI and Superintendents at Hamilton

The Ohio Section of the Technical Association of the Pulp and Paper Industry and the Miami Valley Division of the Superintendents Association will meet jointly at the Anthony Wayne Hotel, Hamilton, Ohio, on Saturday evening, January 17, 1942. This meeting is a continuation of the program started last year when these two organizations followed the example of the Kalamazoo TAPPI and Michigan Superintendents in arranging for an especially well attended meeting to hear a speaker of national importance. It is expected that Mr. Ireland of the Delco Products Division of the General Motors Company will be the main speaker. National officers of both Associations are expected to attend.

An Evaluation of Methocel as a Pigment Adhesive for Paper Coatings*

By R. M. Upright[1], Myron Kin[2], and F. C. Peterson[2]

Abstract

Pigment coating slips were prepared from clay, satin white, titanium dioxide, and a 75% clay—25% calcium carbonate blend. Methocel[3] (methylcellulose) and casein were added as the pigment adhesive in amounts ranging from 12 to 28% of the weight of the coating pigment. After coating, the calendered sheets were evaluated for pigment bonding strength, ink receptivity, smoothness, opacity, gloss, brightness, flexibility, and printability.

Methylcellulose, although relatively new to the paper industry, has received increased attention as a raw material for certain papermaking processes within the past year. Mills previously reluctant to accept Methocel (methylcellulose) on the basis of apparent high cost are now using the material in various applications because they have either found it extremely effective in small quantities or because it is able to effect improvements over existing materials.

Certain properties of methylcellulose *(1)*, namely, its freedom from color and odor, high pigment bonding strength, film flexibility and toughness, high heat resistance, neutrality of solution, and its resistance to chemical and bacterial action are valuable pigment adhesive characteristics. Since no published data have been available to date which would indicate the usefulness of methylcellulose for specialized pigment adhesive applications, the results herein reported are directed toward this end.

Casein was included as a standard for comparison in this study because of its general use as a pigment adhesive.

Preparation of Coated Papers

Raw Materials and Their Preparation

Adhesives: The casein used was a granular type representing the average grade employed by most coating mills. In preparing the casein adhesive, a weighed amount of dry casein was first soaked in cold water for 15 minutes before the addition of 15% of mixed alkali on the dry weight of casein. This alkali consisted of 12 parts of borax, 6 parts of soda ash, and one part of concentrated ammonium hydroxide. Each component was dissolved in a small amount of water and then added in the order named with continuous stirring. The mixture was then diluted to obtain a water to casein ratio of 6 to 1, and then heated at 140 deg. F. for one hour with occasional stirring, cooled below 100 deg. F. and weighed. Any evaporation loss was then corrected by the further addition of water.

The Methocel used in this study was representative of the lowest viscosity material commercially available, namely, the 15-centipoise[4] type. It was employed in the form of a 10% aqueous solution.

Pigments: The pigments chosen for this study included an English coating clay used alone and blended with a coating grade of precipitated calcium carbonate in the ratio of 75 per cent clay and 25 per cent carbonate. These were selected as representative pigments of medium casein requirement. Titanium dioxide and satin white were chosen as representing low and high casein requiring pigments, respectively.

The pigments were added on an O. D. basis, and wet with sufficient water to give a smooth dispersion after mixing. The clay and clay-calcium carbonate pigment slips were prepared by pugging in a mixer for one hour, while high speed stirrers were used with the titanium dioxide and satin white dispersions.

Body Stock: The coating raw stock employed was representative of an average coating grade. Its properties were as follows:

Basis weight (25x38—500), pounds	44.0
Thickness, inches	.004
Bursting strength, p.s.i.	17.6
Tear, grams	
Machine direction	54.0
Cross direction	71.6
Valley size test, seconds	34.7
Smoothness (Williams)	+12
Opacity	.920
Brightness, %	78.5
Dennison wax number	
Felt	9
Wire	12
Ink receptivity factor	77.2

Preparation and Properties of Coating Colors

The required amount of adhesive solution was weighed into the pigment slip to give the desired dry adhesive to pigment ratio, and then stirred for one hour. This mixture, constituting the coating color, was brushed through a 180-mesh screen. In each case, the amount of screenings were sufficiently small to be neglected.

The per cent solids and viscosity of each coating color were determined before coating as follows:

Per cent solids: Samples of the coating color were weighed and dried to constant weight at 100-105 deg. C. The per cent solids and water to solids ratio were then calculated.

Coating color viscosity: The absolute viscosity of each coating color was determined by means of the Ubbelohde viscometer *(2)*.

A summary of the coating formulations and their physical properties are given in Table I.

The colors containing methylcellulose were much more viscous than those containing casein. It was necessary, therefore, to reduce the total solids ratio about 50% in order to obtain the desired fluidity. While viscosity alone does not fully indicate the performance of a coating color on brush or roll coating machines, it appears evident that methylcellulose will

* Presented at the Fall Meeting of the Technical Association of the Pulp and Paper Industry, Ann Arbor, Mich., Sept. 16-19, 1941.

[1] Cellulose Products Division, The Dow Chemical Company, Midland, Mich.

[2] Member TAPPI; Cellulose Products Division, The Dow Chemical Company, Midland, Mich.

[3] Trade Mark Reg. U. S. Pat. Off.

[4] Absolute viscosity at 20 deg. C. of a 2% aqueous solution.

TABLE I.—FORMULAS AND PROPERTIES OF VARIOUS COATING COLORS

Series	Pigment	Composition of adhesive	Adhesive based on pigment, %	Ubbelohde viscosity, cps.	Solids, %	Water to Solids, ratio
A	75 Clay 25 $CaCO_3$	100% Casein	12	45	41.7	1.40
			16	67	38.4	1.60
			20	120	38.0	1.63
			24	96	34.7	1.85
			28	90	33.4	2.00
B	75 Clay 25 $CaCO_3$	100% Methocel	12	144	24.1	3.15
			16	98	18.6	4.38
			20	93	13.4	6.45
			24	138	17.0	4.89
			28	141	15.6	5.40
	Clay	100% Casein	12	68	39.8	1.51
			16	72	38.0	1.63
			20	74	36.5	1.74
			24	95	35.2	1.84
			28	150	33.7	1.96
D	Clay	100% Methocel	12	825	31.5	2.17
			16	478	27.3	2.66
			20	750	26.0	2.84
			24	845	24.5	3.08
			28	1570	24.3	3.12
E	TiO_2	100% Casein	12	13	39.0	1.56
			16	18	36.8	1.71
			20	82	40.4	1.47
			24	42	40.0	1.50
			28	38	37.0	1.70
F	TiO_2	100% Methocel	12	220	27.6	2.61
			16	140	24.4	3.08
			20	186	23.4	3.27
			24	295	22.2	3.50
			28	774	23.8	3.18
G	TiO_2	70% Methocel 30% Invert Sugar	12	118	29.9	2.33
			16	132	27.8	2.60
			20	195	27.1	2.69
			24	195	25.6	2.81
			28	218	23.8	3.18
H*	Satin White	100% Casein	12	13	27.3	2.65
			16	17	26.0	2.84
			20	18	25.0	3.00
			24	38	24.8	3.02
			28	42	24.4	3.09
I	Satin White	100% Methocel	12	1900	17.1	4.84
			16	482	18.7	4.35
			20	614	18.6	4.40
			24	583	17.8	4.60
			28	598	17.1	4.84

*1% Gum arabic and 0.25% Aerosol OT on solution.

require a higher water to solids ratio than casein at equal adhesive content.

Application of Coating Colors

The coating color was applied by means of a Martinson single-sheet laboratory coater. The rawstock was cut into sheets 9.5 by 12 inches, and placed felt side up on the coater with their machine direction parallel to the coating doctor. This was done to prevent uneven coating deposition due to curl of the stock. The coating color was poured on the edge of the sheet nearest the doctor blade, and the sheet was then immediately pulled under the blade with a smooth stroke.

Trial sheets were coated at various settings of the micrometer gage and allowed to air-dry. They were then oven-dried to constant weight. The average moisture-free weight of the rawstock had been previously determined from a large number of sheets and the weight of coating was determined by difference.

Following the adjustment of the coating weight to the desired value of 16 ± 1 pound per standard ream (25×38—500), a number of sheets were coated at the predetermined doctor setting, and allowed to air-dry. After drying the sheets were given a low finish on a commercial supercalender under identical operating conditions.

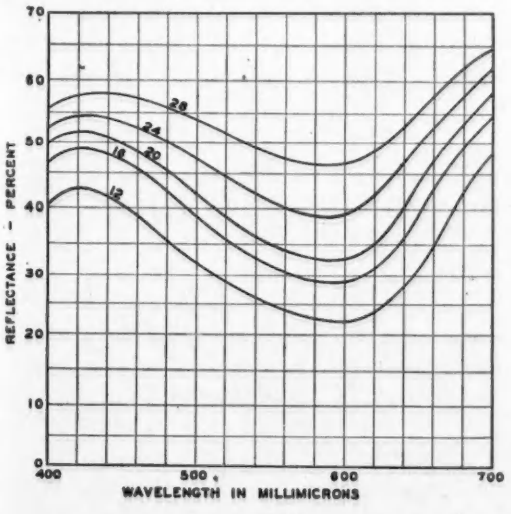

FIG. 1

Spectral Reflectance Curves of K & N Ink Smears for Methocel-Sized Clay-Carbonate Coatings. Adhesive: 12, 16, 20, 24, and 28%.

Testing Methods

Fifteen calendered sheets of satisfactory coating uniformity and weight were selected from each series. The final test result in each case represents an average of at least 5 determinations on separate samples conditioned at 50% relative humidity and a temperature of 70 deg. F. (*see* TAPPI Standard T 402 M-41).

Dennison Wax Test

The bonding of the coating to the rawstock was measured by means of the Dennison paper testing waxes, Series 120A. The wax number cited indicates that picking was first observed with that wax.

Printability

Samples of coated papers were proof-pressed on a commercial platen press using a regular halftone ink. This permitted correlation of the laboratory wax pick test with actual printing conditions. This was of primary importance inasmuch as the Dennison waxes were essentially formulated for use with casein adhesives and their direct application to methylcellulose without such correlation would be open to question.

Ink Receptivity

The degree of ink receptivity was measured by means of the K & N ink test following the procedure *(3)* of applying an excess of ink to the coated sheet and allowing this to remain for a period of exactly 2 minutes. At the end of this time the excess ink was removed with a clean cloth and the color intensity of the stain was measured by means of the General Electric recording spectrophotometer *(4)*. A complete spectral reflectance curve throughout the visible spectrum of 400 to 700 mμ was prepared on one sample of each set of three. The curves shown in Fig. 1 are typical. This was necessary to establish with certainty that the stains at the various adhesive to pigment ratios were nearly identical in color. If the form of the curves had differed to any appreciable extent, indicating a variation in the color of the ink stain, ink receptivity could not have been expressed numerically as brightness (reflectance) at a specific wavelength. Instead, the actual true brightness would have required integration from the complete curve precluding the use of the reflectance figure at only one wavelength. Inasmuch as variations occurring in the form of the color curves were less than differences between individual samples of the same run, the stains were considered to be practically identical in color. For this reason, the reflectance was

measured at only one wavelength, namely, 458 mμ, on the other two samples of the set to obtain comparative ratings of the brightness of the ink stains. The reflectance indicated relative ink receptivities of the coatings. Light of 458 mμ wavelength was chosen because it represents the average within the range generally utilized by the majority of paper testing instruments employed for measurements of this kind *(5)*.

Opacity

The opacity of the coated sheets was determined according to TAPPI Standard T 425m.

Brightness

The brightness of the coated sheets was measured on the Higgins photoelectric colorimeter *(6)* employing a standard magnesium carbonate block and a no. 49 Wratten filter having a 400 to 500 mμ wavelength range.

Gloss

The gloss of the calendered sheets was measured with a Bausch and Lomb glossmeter *(7)*.

Smoothness

The William smoothness tester *(8)* was employed to determine the physical flatness of the coated sheets.

Evaluation of Coated Papers

Bonding Strength

Figure 2 shows the relation between the pick test and the amount of adhesive present in the coatings. The low adhesion of the satin white coatings, the high bonding strength of the titanium dioxide colors, and the medium picking tendencies of clay and the clay-carbonate blend coatings are in harmony with the results of other pigment adhesive studies *(9-10)*.

For satin white, clay, and the clay-carbonate blend, methylcellulose exhibits greater bonding strength than does casein throughout the adhesive range studied. The amount of this difference depends upon the pigment. In the case of clay it was found that about 6% less methylcellulose was required than casein to secure a given Dennison wax number. For the clay-carbonate blend this difference throughout the 12 to 28% range approximates 4%. In the case of titanium dioxide a difference of about 8% exists in favor of methylcellulose at the higher percentages but tends to decrease to values equal to casein at lower ratios of adhesive. With satin white the strengths of the coatings for both adhesives were too low to reliably determine any difference. It is to be noted that the actual pick tests in this series fell below the lowest wax of the 120A series. While all the coatings picked with the no. 2 wax, there was a sufficient difference in the type of pick to permit construction of a graph.

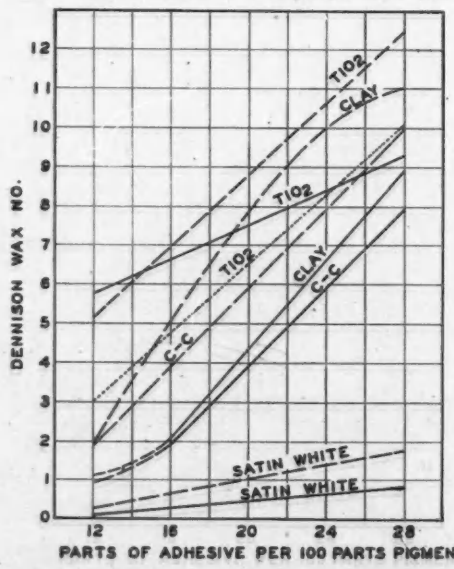

Fig. 2

Comparison of the Bonding Strength of Casein and Methocel.
—— Casein: — — — Methocel; - - - - - Adhesive 70-30 Methocel—Invert Sugar. C — C=Blend 75-25 Clay-Calcium Carbonate.

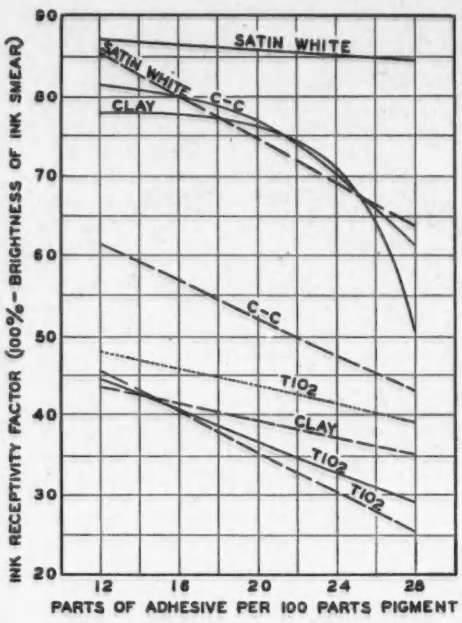

Fig. 3

Comparison of the Ink Receptivity of Coatings prepared from Casein and Methocel.
—— Casein; — — — Methocel; - - - - - - 70-30 Methocel—Invert Sugar. C—C=Blend 75 Clay, 25 Calcium Carbonate.

As a means of determining the relation between the wax numbers of Methocel and casein coatings with actual printing pick it was necessary to proof samples of each on a commercial platen press under similar conditions using a typical half-tone ink. The results of these printing tests showed that picking occurs at a lower Dennison wax number with Methocel than casein. Table II below includes the results of these tests and shows in the case of the clay pigment, for example, that whereas no picking of the casein coating occurred at a no. 6 wax, a no. 5 wax in the case of Methocel coating likewise showed freedom from picking. Similar results were secured on each of the other coating colors. Therefore under actual printing conditions less Methocel is required to bind the pigment to the body stock than is indicated by the Dennison wax test.

In those cases where nonreceptivity is recorded, the coated stock failed to take the ink satisfactorily. This property is discussed more fully under the subject of ink receptivity.

Ink Receptivity

A numerical expression for the degree of ink receptivity was derived from the brightness readings measured by means of the spectrophotometer as de-

TABLE II.—CORRELATION OF PRINTING PICK WITH DENNISON WAX PICK ON METHOCEL AND CASEIN BONDED COATINGS

Adhesive, %	Casein: Dennison Wax	Casein: Printing Pick Clay	Methocel: Dennison Wax	Methocel: Printing Pick
12	1	Pick	2	Slight Pick
16	2	Pick	5	No pick
20	4	Pick	8	No pick
24	6+	No pick	10	No pick
28	9	No pick	11	Nonreceptive
	75% Clay—25% Calcium Carbonate			
12	1	Pick	2	Slight pick
16	2	Pick	4	No pick
20	4	Slight pick	6	No pick
24	6	No pick	8	No pick
28	8	No pick	10	Nonreceptive
	Titanium Dioxide			
12	6	Slight pick	5	No pick
16	7	Very slight pick	7	No pick
20	7+	No pick	9	No pick
24	8+	No pick	11	No pick
28	9	No pick	13	No pick
	Satin White			
12	Below 2	Pick	Below 2	Pick
16	Below 2	Pick	Below 2	Pick
20	Below 2	Pick	Below 2	Pick
24	Below 2	Pick	Below 2	Slight pick
28	Below 2	Pick	Below 2	Very slight pick

scribed above. Because the brightness values are inversely proportional to the ink receptivity, this reading was subtracted from 100% and designated as the ink receptivity factor. This factor then becomes directly proportional to the ink receptivity of the coating.

Figure 3 shows the relation between ink receptivity and adhesive content. These curves point to the previously established fact that satin white is a pigment possessing a relatively high degree of ink receptivity while titanium dioxide is comparatively low in this respect. Clay alone falls between these two. The addition of precipitated calcium carbonate to the clay increases the degree of ink absorbency.

Methylcellulose decreases ink penetration or receptivity to a greater extent than does an equal amount of casein because of its superior film forming and oil and greaseproof properties. This is attributable to the presence of an ink resistant film around the pigment particles. In those cases where the coatings in Table II were listed as nonink receptive, it is believed that this film prevented the pigment from absorbing the ink, thus causing the sheets to be released from the press with little or no ink impression. While this would be undesirable for regular coated printing papers, it does suggest the use of Methocel for varnish or lacquer applications. In this case a coating is desirable which will resist varnish penetration into the stock and thereby increase gloss, promote uniformity of the coating, and reduce the amount of over-printing material required.

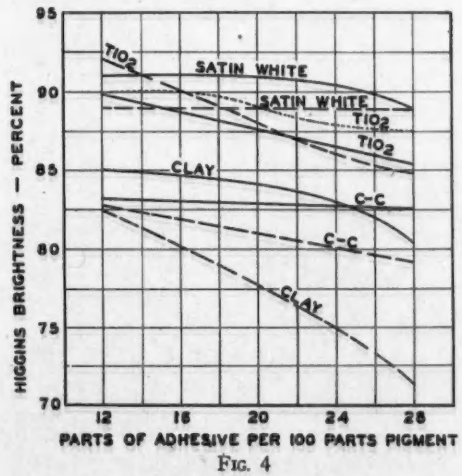

FIG. 4

The Relative Brightness of Methocel and Casein Sized Pigment Coatings.
——— Casein; — — — Methocel; ------ 70-30 Methocel—Invert Sugar. C—C=Blend 75-25 Clay—Calcium Carbonate.

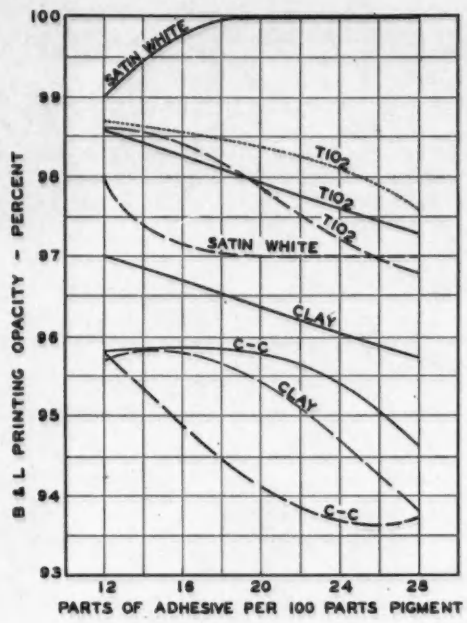

FIG. 5

The Relative Opacity of Methocel and Casein Sized Pigment Coatings.
——— Casein; — — — Methocel; ------ 70-30 Methocel—Invert Sugar. C—C=Blend 75-25 Clay—Calcium Carbonate.

The presence of invert sugar as a plasticizer for methylcellulose appears from Fig. 3 to have increased ink receptivity. However, this is actually due to a replacement of a part of the methylcellulose by the invert sugar in the coating formula. In consequence, ink absorbency has not been increased when viewed in terms of the methylcellulose content of the coating. That is, the 24 and 28% invert sugar-methylcellulose adhesive coatings contained the equivalent of 16.8 and 19.6% of methylcellulose adhesive, respectively, since 30% of invert sugar has been added on the total combined methylcellulose-plasticizer solids. For this reason, the ink receptivity values should closely approximate those of the unplasticized methylcellulose-titanium coatings containing equivalent percentages of methylcellulose.

BRIGHTNESS

Increasing the ratio of adhesive to pigment effects a reduction in brightness. As compared to casein coatings bonded with methylcellulose exhibit decreased brightness over the entire adhesive range investigated as shown in Fig. 4. This difference is slight in the case of the higher opacifying pigments such as satin white and titanium dioxide, but is slightly greater with the clay-carbonate and pure clay coatings.

The decrease in brightness with methylcellulose is evidently due to the relative transparency of the adhesive as compared to the pigment. Because of this greater transparency there is more show-through of

the colored bodystock. Since the base stock is much darker than the pigment, a loss in brightness results.

Opacity

The opacity values of Fig. 5 are similar in effect to the brightness data discussed above.

Methylcellulose produces less opaque coatings than casein because of its greater transparency as previously pointed out. This fact also accounts for the loss in opacity with increases in adhesive concentration.

Gloss

For those pigments investigated the gloss of the coated sheets decreased with increasing amounts of either methylcellulose or casein. The rate of decrease is about the same for both adhesives, as shown by the curves in Fig. 6. With titanium dioxide there is no appreciable difference in this property, whereas in the case of clay the reduction in gloss is greatest when methylcellulose is employed.

Smoothness

The corrected smoothness readings have not been included since the results obtained precluded graphic representation. The data were of little value as a means of judging the relative smoothness of either the methylcellulose or casein coatings. Based on actual print tests there appears to be no significant difference between the two adhesives in this property.

Coating Flexibility

An evident difference existed in the flexibility of the coatings prepared from the two adhesives. When sheets bonded with casein were creased by rolling a 100-gram weight over the fold, the coating cracked and there was a certain amount of flaking of the pigment at and adjacent to the crease. With methylcellulose coatings there was also a slight rupturing or break at the fold at the lower adhesive concentrations, but the pigment did not tend to flake off. The addition of 30% invert sugar to replace an equivalent amount of methylcellulose adhesive increased the flexibility of the coating to a slight extent.

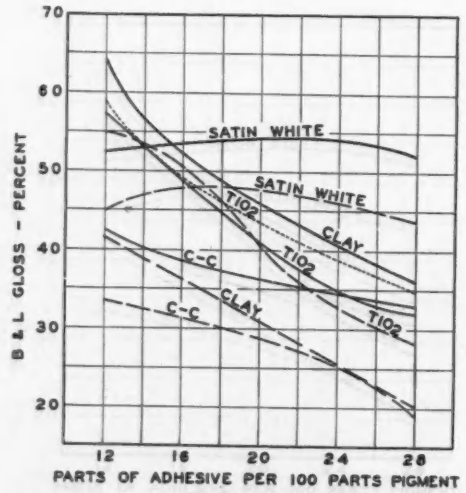

Fig. 6

A comparison of the effect of Methocel and Casein on Gloss of Coated Papers containing Various Pigments.

—— Casein; ——— Methocel; ------ 70-30 Methocel—Invert Sugar. C—C=Blend 75-25 Clay—Calcium Carbonate.

Conclusion

From the properties imparted by Methocel to pigment coatings as compared with casein the following is indicated: Methylcellulose exhibits a higher bonding strength and a greater resistance to ink penetration while producing a more flexible coating. Methylcellulose effects a reduction in gloss, opacity and to a slight extent, brightness. There appeared to be no appreciable difference in smoothness.

The use of Methocel for incorporation in a coating color is indicated primarily where the particular property improvements desired are high resistance to ink, varnish, or lacquer and increased coating flexibility.

The study is being continued with blends of Methocel and casein. The blends to be studied will consist mainly of casein with small amounts of Methocel. Before this study could be undertaken, however, it was necessary first to fully evaluate each adhesive separately. The results of this further investigation will be reported at a later date.

Acknowledgment

The authors wish to express their appreciation to the Bryant Paper Company, Kalamazoo, Michigan, for their generous favor in calendering numerous test samples.

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China Imports Less Overissues

Where formerly the United States supplied a large part of China's purchases of old and over-issue newspapers, the last 18 months have disclosed a marked drop in such Chinese imports, according to advices to the Department of Commerce reporting that not over 1,000 bales were in Shanghai at the end of June.

Up to 1939 the United States furnished about 85 per cent of China's total imports of such articles, but during 1940 imports fell to less than one-third of the 1939 figure, and the first four months of the present year showed even lower purchases. Additional shipments to the 1,000 bales reported on hand in June were not expected for at least four months.

Japan has supplanted the United States in this market since the outbreak of war in Europe; however, most of the old newspapers imported from Kwantung are of American origin, it was stated, and a small percentage of imports credited to Japan also actually originated in the United States.

Most imports from the United States of this kind pass through the port of Shanghai, those from Japan arriving through North China ports, with some shipments landed at Shanghai trans-shipped north in Japanese bottoms. Previous to hostilities in 1937, large amounts of old newspapers were distributed from Shanghai to interior points, but it is now easier and cheaper, it was stated, to distribute them through North China ports now to the interior.

Opacity Variability as a Measure of Coated Raw Stock Performance

By F. H. Frost[1] and Charles Russell[1]

Abstract

A distinction is made between formation and spread of raw stock. It is suggested that the opacity variation across the web is a measure of the spread and that spread of the stock on the paper machine wire is one of the chief factors which determines the performance of the stock on the coating machine. The correlation between opacity variation and density variation is shown by the figures. Curves of opacity variation of coated raw stock of fine performance qualities are contrasted with curves of raw stock of poor performance qualities from three different paper companies.

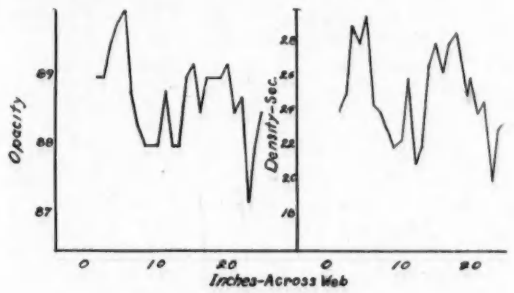

FIG. 1

The formation of a sheet of paper may be defined as the degree of dispersion of the individual fibers; spread, on the other hand, may be defined as the variability of basis weight with or across the web of a sheet. Hence a sheet with a wild formation may have a good spread, or a sheet with a fine formation may be broken into areas—each with perfect fiber distribution—of variable weight.

Theoretically these two definitions blend but for practical purposes a sharp differentiation is not essential.

The first raw stock delivered to the first coater probably resulted in an argument between the papermaker and the coating "expert" as to why better performance was not obtained. I believe the argument is still in progress—carried on vigorously between the descendents of the two parties who originally started the argument.

[1] S. D. Warren Company, Cumberland Mills, Me.

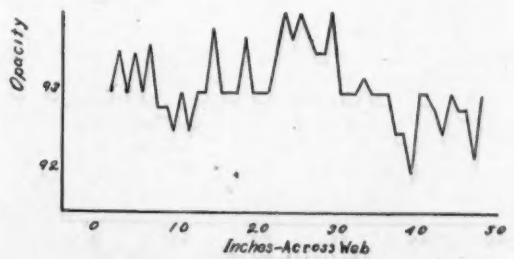

FIG. 2

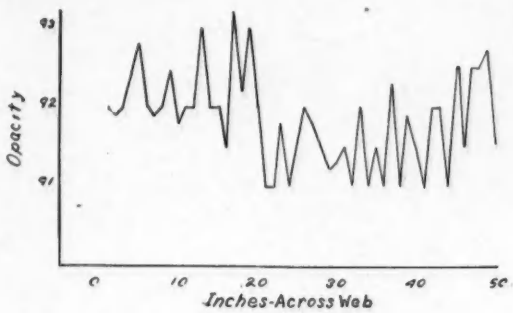

FIG. 3

Blame for poor performance on a coating machine may be, of course, due to faults in the raw stock or faults in the coating methods or equipment, or both. It is often difficult to decide which is basically at fault and in many cases a correction may be made either in the body stock or by a change in coating technique.

It is our belief that poor spread on the paper machine wire is usually responsible for badly distorted paper in the coated drying lines, and that such distortion causes wrinkles on the winders, which subsequently cut on the calenders. Such conditions may be caused by poor or out of adjustment coating equipment. Hence, it is important to have some means of placing responsibility in such cases.

The method herewith presented is to cut a 3-inch wide strip across the web of the body stock in question and to take opacity readings with a Bausch & Lomb opacimeter at intervals of 1 inch. The variation in opacity is then plotted on graph paper.

Body stocks which show a maximum variation of 2% will not give trouble; variations of 2 to 3% will not give trouble if the maximum and minimum points are not close together. Variations of 3% or more will nearly always give trouble, and after coating the

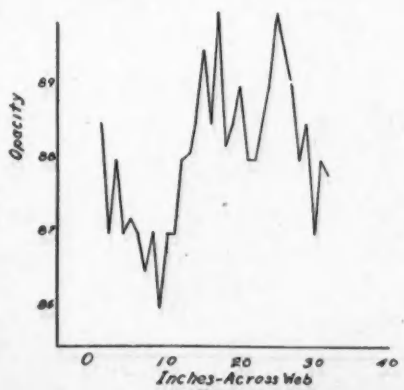

FIG. 4

maximum distortion generally corresponds to the points of maximum opacity of variation.

We have found, of course, that opaque or dark areas in a sheet of body stock are of greater basis weight than light areas. Variations of 8% in weight have been found between adjacent 1-inch strips. Dark areas which are heavy are of greater density (Gurley) and such areas show longer water penetration times. In addition, paper machine cockle cuts frequently are found in regions of wide opacity differences.

The figures show body stocks of good and bad behavior characteristics from three different paper companies.

Figure 1 shows the relationship between density and opacity. The right hand curve is density; the left hand curve, opacity. The general agreement is good and we have found this relationship to be close.

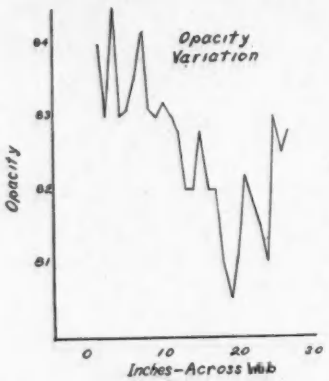

FIG. 5

Figure 2 shows a body stock which ran well without severe distortions.

Figure 3 shows another body of good running characteristics.

Figure 4 gives the other side of the picture. Opacity variation is 4% and severe wrinkling occurred at the points of greatest variation.

Figure 5 shows another poor performance body stock. The maximum and minimum readings are about thirty inches apart.

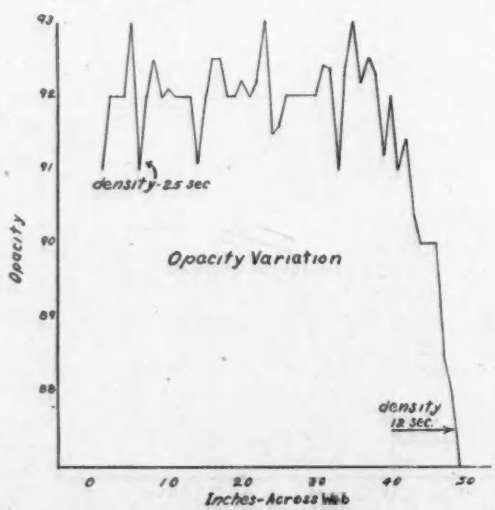

FIG. 6

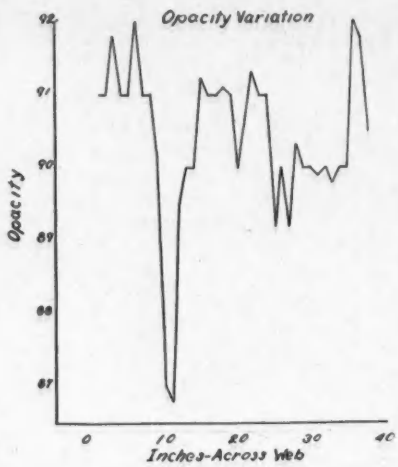

FIG. 7

Figure 6 shows a body with a slack edge which passed the normal paper machine inspection but which produced no good paper. Note the density drop at the light edge. This roll blister cut on this same edge.

Figure 7 shows a very sharp break nearer the middle of the roll. Bad winder cuts resulted in the area of low opacity. The waste was very high.

Figure 8 shows a case of a sudden drop of 2.5% which was accompanied by paper machine cockles and which wrinkled on the winder and cut on the calenders.

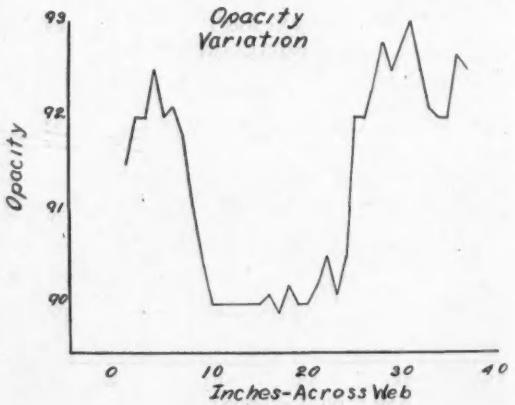

FIG. 8

These eight cases represent random samples from three different sources and serve to show how this method may be used to check the operating characteristics of coated body stock in respect to wrinkling on the winder and cutting on the calenders. The method is submitted as a means of aiding the general problem of waste reduction.

E. H. Sussenguth is Transferred

BOSTON, Mass., January 5, 1942—Edward H. Sussenguth, of the Boston office of the American Writing Paper Corporation, has been transferred to the Philadelphia and Washington territory which he will cover with the home office in New York City.

Imports of Paper and Paper Making Stock

Giving Manifests of New York, Boston, Philadelphia and Other Ports of Newsprint, Wrapping, Writing, Coated, Blotting, Tissue, Strawboard, Wallboard, Cigarette Papers, Sulphite, Kraft and Ground Wood Pulp.

Importers may have their shipments listed in these columns by submitting records of imports to this publication.

NEW YORK IMPORTS

WEEK ENDING JANUARY 3, 1942

RAGS, BAGGINGS, ETC.

National City Bank, ——, ——, 33 bls. rags.
West Texas Cottonoil Co., ——, ——, 1,426 bls. cotton linters.
——, ——, ——, 387 bls. cotton linters, 309 bls. cotton waste.
Lush Cotton Products Co., Inc., ——, ——, 91 bls. cotton linters.

OLD ROPE

R. L. Pritchard & Co., ——, ——, 784 bls. old hemp rope cuttings.

CASEIN

Casein Co., of America, Inc., ——, ——, 850 bags (ground).
A. Hurst & Co., Inc., ——, ——, 50 bags (ground).
American British Chemical Supplies, ——, ——, 417 bags (ground).
A. Hurst & Co., Inc., ——, ——, 837 bags (lactic ground).
Casein Co., of America, Inc., ——, ——, 834 bags.
A. Hurst & Co., Inc., ——, ——, 417 bags (ground).
National City Bank, ——, ——, 500 bags.
C. W. Burckhalter, Inc., ——, ——, 834 bags.
H. S. Cramer & Co., ——, ——, 834 bags (lactic ground).
National City Bank, ——, ——, 417 bags.
H. S. Cramer & Co., ——, ——, 1,668 bags (ground).
Irving Trust Co., ——, ——, 1,668 bags (ground).
Louis Furth, Inc., ——, ——, 378 bags (lactic).
American Cyanamid & Chemical Corp., ——, ——, 834 bags (ground).
Packing Products Co., ——, ——, 417 bags (ground).
——, ——, ——, 417 bags (ground).
A. W. Fenton Co., ——, ——, 167 bags (rennet).
W. M. Allison & Co., ——, ——, 84 bags (ground).

SKIN GLUE

Biological Raw Products, Inc., ——, ——, 200 bags (sheets).

Indianapolis Demand Heavy

[FROM OUR REGULAR CORRESPONDENT]

INDIANAPOLIS, Ind., January 5, 1942—Paper demand in this section continued heavy last week and as has been the rule for some months, the principal difficulty was in securing deliveries. However, with inventories completed, manufacturers and jobbers both have found they have passed through one of the most successful years in their history. As the old year closed, prices were firm and well stabilized at considerably higher levels than the year before. They are being held steady mostly because of voluntary agreements in the trade itself. It was thought and feared during the first quarter of the year that there might be a run-away market before this time, but nothing of the kind has developed and any price rises have been fully justified by the increased costs of doing business.

Last week saw a continued heavy demand for all items in the kraft field, with wrapping papers and board stock being most in demand. In fact, the demand is such that it can not be supplied immediately. With this country now in a first class war, the local trade is prepared to be rationed strictly not only in kraft items, but in practically all other lines.

Fine paper demand continued steady last week with all ledgers, books and covers moving nicely. There is considerable work in prospect with the larger printing houses in this section and the paper demand will be all that can be delivered at least during the first quarter. It is reported that some advertising schedules have been cutailed because of the uncertainty in securing paper stock.

In spite of cold weather, there appears to be no diminution in the demand for roofing and building paper. The year has been one of the best on record and if deliveries can be made, not only in papers but in other building supply materials, new construction will proceed at a good rate during the entire winter.

Last week saw some price increases in the paper stock field, but the rag market held steady.

William A. Kelley with OPM

William A. (Spike) Kelley, formerly with the E. D. Jones & Sons Company and on leave of absence is now in the Department of Industrial and Office Machinery of the Office of Production Management (Building E, one block from the Social Security Building) as a paper machinery specialist.

Mr. Kelley is a 1925 graduate of the Pennsylvania State College, following which he worked in the aircraft carrier turbine testing laboratories of the General Electric Company in Schenectady, N. Y. Following this he was Wisconsin and Minnesota manager for the Reliance Electric and Engineering Company, during which period he invented the supercalender drive, that has made possible the present high speeds, and the right angle gear motor drive for the paper machine. During his vacations from college he worked for the U. S. Steel Company and invented the overspeed device for the Foren seamless tube mill. For the past six and one half years he has been midwestern manager for the E. D. Jones & Son Company of Pittsfield, Mass., for whom he invented certain beater control devices.

Mr. Kelley may be reached at the Congressional Country Club, R. F. D. 3, Washington, D. C.

Beach & Arthur Sell Building

[FROM OUR REGULAR CORRESPONDENT]

INDIANAPOLIS, Ind., January 5, 1942—Officials of the Beach & Arthur Paper Company here have announced the sale of their factory building at 2900 Columbia avenue to the Packard Manufacturing Company, which will manufacture tank parts for defense purposes. The price was reported to be more than $100,000. The paper company will consolidate operations with the company's plant at Coatsville, Pa.

New York Paper and Pulp Market Review

OPM Issues Amendment To Burlap Conservation Order and Explains Disposition of Supplies—Waste Paper Market Disturbed By Lack of Full Adherence To OPA Price Schedule—Rag Prices Firm

Office of the PAPER TRADE JOURNAL
Wednesday, January 7, 1942.

Business in the wholesale paper market this week reflects the customary lull following the Holidays. Production of paper declined and business concerns conducted their inventory taking as usual. Comment in the market is, in great part, optimistic. A year of uncertainty lies ahead and business men are aware that many strains and sacrifices must be met during the period that the country is forced to put into effect a strict war economy.

Wholesale volume in all major grades of paper is expected in the trade to continue at a very high level during the first half of the year, with prices well stabilized at a reasonable level. Backlog orders are still high in many lines, despite the acknowledged inability of some leading producers to accept no new orders. The trend of consumption in paper for direct government use and for lend-lease requirements, continues upward. A rather drastic rationing plan for pulp and all important materials, is generally expected by all business concerns.

Paper production for the week ended December 27 was estimated at 80.0%, compared with 64.4% for 1940, with 66.1% for 1939, with 47.0% for 1938, and with 59.2% for the corresponding week for 1937.

Paper board production for the week ended December 27 was 76.0%, compared with 48.0% for 1940, with 45.0% for 1939, with 35.0% for 1938, and with 24% for the corresponding week for 1937.

Current reports received from many manufacturers' representatives, jobbers, and general paper merchants, indicate difficulty in obtaining quantities desired in some specialty papers, continues. Some converting mills are finding it increasingly difficult to obtain the grades of pulp they have long used in tonnages required to meet the current heavy demand for their products. The impending pooling arrangement expected to be put into effect by the OPM, may or may not relieve the tight pulp supply situation for some converting mills. It is expected that allotments of pulp will be made in the order of the essential nature of the manufactured products.

No important change in paper prices has been reported this week.

Chemical Pulp

No important change in demand and prices has been reported in chemical woodpulp this week. Demand continues strong, with increasing tightness in the supply of prime grades. The formation of the pooling arrangement by the OPM is favorably commenting upon in some quarters, as a measure that will benefit the industry as a whole, and a practicable means to provide the government with the nitrating grades it requires, with as broad a distribution of paper grades as possible.

Rags

Mill buying in the rag market is moderate at this date. Prices are firm at prevailing representative quoted prices. Demand for the roofing grades is reported active at OPA prices.

Old Rope and Bagging

A strong, steady demand continues in old Manila rope. Prices continue firm and unchanged.

Trading in old bagging is inactive as the trade awaits further information of the OPM Burlap and Burlap Products Order M-47. This order places restrictions on delivery of processing and the conservation of bags for reuse.

Old Waste Paper

Irregularity in the waste paper market is widely reported. Many concerns continue to adhere to the OPA schedule of maximum prices. Many cases of lack of cooperation with the government agency are reported, however, and this market is currently reflecting adverse trade practices which inevitably occur when a stabilizing factor is recognized by some and not upheld by all in the trade, as the OPA price schedule is at this date. Prices are officially unchanged.

Twine

Prices on major grades of twine are firm and unchanged. The OPM order to conserve the supply and direct the distribution of burlap and burlap products, affects the customary wrapping of cordage with burlap. The OPM order M-47, prohibits the use of burlap for any other purpose than for the manufacture of agricultural bags, except by authorization of the OPM.

Negotiate Agreement at Ogdensburg

[FROM OUR REGULAR CORRESPONDENT]

OSWEGO, N. Y., January 5, 1942—Negotiations relative to a new working agreement between the International Association of Machinists and the St. Regis Paper Company were resumed early last week. Following a short session Monday morning another conference was held at the plant office in the afternoon. Officials and negotiating committee members, as well as Stephen M. Estey, district representative of the Machinists' Association, met with company officials. Progress reports on the conferences held so far were given to union members later in the week.

Increased Business for Ogdensburg

[FROM OUR REGULAR CORRESPONDENT]

OGDENSBURG, N. Y., January 5, 1942—Indications of increased business during the coming year is already shown at a number of the large manufacturing plants. Wage levels are reported higher today than at the beginning of 1941. The Algonquin Paper Company has operated on a schedule of twenty-four hours daily throughout the year with prospects that these schedules will continue during this year. The company is understood to be employing the largest working force in its history.

MISCELLANEOUS MARKETS

Office of the PAPER TRADE JOURNAL,
Wednesday, January 7, 1942.

BLANC FIXE—Quotations on blanc fixe are firm and continue unchanged at prevailing market levels. Demand reported good for the week. The pulp is currently quoted at $40 per ton in barrels, at works; the powder is offered at $60 per ton, f.o.b., works.

BLEACHING POWDER—Prices on bleaching powder are firm. Market reported active for the week. Prices stabilized by agreement with OPA. Bleaching powder is currently quoted at $2.25 per 100 pounds, in drums, at works.

CASEIN—Quotations on casein are firm. Demand reported good for the week. Standard domestic casein, 20-30 mesh, is currently quoted at 31 cents per pound; 80-100 mesh at 31½ cents per pound; all prices in bags, car lots. Standard Argentina casein is currently offered at 27 cents per pound. No quotations on French casein.

CAUSTIC SODA—Prices on caustic soda are reported firm. Demand heavy for the current week. Solid caustic soda is currently quoted at $2.30 per 100 pounds, flake and ground at $2.70 per 100 pounds, in drums, at works.

CHINA CLAY—Quotations on china clay are firm and continue unchanged this week. Domestic filler clay is currently quoted at from $7.50 to $15 per ton; coating clay at from $12 to $22 per ton, at mines. Imported clay is quoted at from $13 to $25 per long ton, ship side.

CHLORINE—Quotations on chlorine unchanged. Market under full priority control, with shipments allocated. Supplies limited. Chlorine is currently quoted at from $1.75 per 100 pounds, in single-unit tank cars, f.o.b., works.

ROSIN—Quotations on some grades of rosin are higher for the current week. "G" gum rosin is currently quoted at $2.97 per 100 pounds, in barrels, Savannah. "FF" wood rosin is currently quoted at $3.04 per 100 pounds, in barrels, New York. Seventy per cent gum rosin size is quoted at $3.32 per 100 pounds, f.o.b., works.

SALT CAKE—Prices on salt cake are firm. Demand active for the current week. Domestic salt cake is currently quoted at $15 per ton in bulk; chrome salt cake at $16 per ton. All prices in car lots, f.o.b., shipping point. Quotations on imported salt cake are nominal at $16 per ton.

SODA ASH—Quotations on soda ash are firm and continue to conform to prevailing market quotations. Demand reported heavy. Quotations on soda ash in car lots, per 100 pounds, are as follows: in bulk, $.90; in paper bags, $1.05; and in barrels, $1.35.

STARCH—Prices on corn starch continue unchanged for the current week. Pearl is currently quoted at $3.10 per 100 pounds; powdered starch at $3.20 per 100 pounds; all prices in bags, car lots, f.o.b., Chicago.

SULPHATE OF ALUMINA—Quotations on sulphate of alumina are firm. Demand reported good. The commercial grades are currently quoted at $1.15 per 100 pounds; iron free at from $1.75 to $1.85 per 100 pounds, in bags, car lots, f.o.b., works.

SULPHUR—Prices of sulphur are firm and continue to conform to prevailing market quotations. Annual contracts are currently quoted at $16 per long ton, f.o.b., mines. Spot and nearby car lots are quoted at $18 per ton.

TALC—Quotations on talc are firm and continue unchanged at prevailing market prices. Domestic talc is currently quoted at from $15 to $21 per ton, at mills. No quotations on imported talc.

MARKET QUOTATIONS

Paper

(Delivered New York)

News, per ton—			
Roll, contract	$50.00	@	—
Sheets	58.00	"	—
Kraft—per cwt.—Delivered Zone A			
Northern, Extra Quality	$5.25	@	$6.00
Superstandard	4.87½	"	5.25
Northern Standard Wrapping	4.50	"	5.00
Standard Wrapping	4.50	"	—
Tissues— Per Ream—Carlots			
White No. 1	1.12½	"	—
White No. 1 M. G.	1.05	"	—
White No. 1½	1.00	"	—
White No. 2	1.00	"	—
Anti-Tarnish M. G.	.95	"	—
Colored	—	"	—
Kraft	.95	"	—
Manila	.90	"	—
Unbl. Toilet, 1 M.	4.16	"	—
Bleached Toilet	5.70	"	—
Paper Towels, Per Case—			
Unbleached, Jr.	2.35	"	—
Bleached, Jr.	2.65	"	—
Manila—per cwt.—C. l. f. a.			
No. 1 Jute	8.75	@	10.75
No. 1 Manila Wrapping, 35 lb.	5.50	"	5.75
No. 2 Manila Wrapping, 35 lb.	5.25	"	5.50
Boards, per ton—			
News	*45.00	@	—
Chip	*45.00	"	—
Sgl. Mla. LL Chip	*60.00	"	—
White Pat. Coated	*75.00	"	—
Kraft Liners 50 lb.	*60.00	"	—
Binders Boards	*80.00	"	—

* OPA Maximum Prices.

The following are representative of distributors' resale prices:

Rag Content Bonds and Ledgers—White, Assorted Items, Delivered in Zone 1:

	Bonds	Ledgers
100% Rag Ext. No. 1	$40.25@$47.25	$47.40@$48.50
100% Rag	32.20 " 37.75	33.35 " 39.25
85% Rag	.... "	32.20 " 37.75
75% Rag	24.75 " 29.00	25.90 " 30.50
65% Rag	.... "	22.80 " 27.75
50% Rag	18.70 " 22.75	19.90 " 24.25
25% Rag	16.40 " 20.00	17.55 " 21.50

Colors at $1.00 cwt. extra.

Sulphite Bonds and Ledgers—White, Assorted Items. Delivered in Zone 1:

	Bonds	Ledgers
No. 1	$10.55@$12.75	$11.70@$14.25
No. 2	9.65 " 11.75	10.80 " 13.25
No. 3	9.20 " 11.25	10.35 " 12.50
No. 4	8.90 " 10.75	10.05 " 12.25

Colors $1.00 cwt. extra.

Free Sheet Book Papers—White, Cased Paper.

Delivered in Zone 1:

No. 1 Glossy Coated	$13.65	@	$15.50
No. 2 Glossy Coated	12.40	"	14.00
No. 3 Glossy Coated	11.60	"	13.25
No. 4 Glossy Coated	11.15	"	12.75
No. 1 Antique (watermarked)	10.25	"	11.75
No. 2 Offset	9.60	"	11.00
A Grade E. F.	9.35	"	10.75
A Grade S. & S. C.	9.60	"	11.00
B Grade E. F.	8.85	"	10.25
B Grade S. & S. C.	9.10	"	10.50
C Grade E. F.	8.55	"	9.75
C Grade S. & S. C.	8.80	"	10.00
D Grade E. F.	8.25	"	9.50
D Grade S. & S. C.	8.50	"	9.75

Ivory & India at $.50 cwt. extra.

Mechanical Pulp

(On Dock, Atlantic Ports)

No. 1 Imported—			
Moist	No prices		
Dry	No prices		
(Delivered)			
No. 1 Domestic and Canadian	40.00	@	45.00

Chemical Pulp

(On Dock, Atlantic, Gulf and West Coast Ports)

Bleached Sulphite (Domestic and Foreign)—			
Prime Bleached Sulphite	3.62½	@	4.75
Prime Qualities—			
Easy-Bleaching Sulphite	3.17½	"	4.25
Strong Unbleached Sulphite	3.17½	"	4.25
News Grade, delivered Unbleached Sulphite	63.75	"	67.75
(On Dock, Atlantic Ports)			
Kraft Bleached	4.12½	"	—
Kraft Light & Strong	No price		
Kraft No. 1	No prices		
(Delivered)			
Kraft Domestic and Canadian	3.00	"	4.00
(Delivered)			
Soda Bleached	3.30	"	—

Add 60 cents per short ton, does charges for Albany; $2.50 for Lake Ports East and $3.50 for Lake Ports West of Mackinac Straits.

Domestic Rags

New Rags

(Prices to Mill f. o. b. N. Y.)

Shirt Cuttings—			
New White, No. 1	8.00	@	8.25
Silesias No. 1	4.50	"	4.75
New Unbleached	8.00	"	8.25
Blue Overall	5.75	"	6.00
Fancy	3.00	"	3.25
Washables	2.50	"	2.75
Mixed Khaki Cuttings	2.50	"	2.75
O. D. Khaki Cutings	3.00	"	3.15

Old Rags

White, No. 1—			
Repacked	*3.80	"	—
Miscellaneous	*3.20	"	—
White, No. 2—			
Repacked	*2.90	"	—
Miscellaneous	*2.90	"	—
Third and Blues—			
Repacked	*2.20	"	—
Miscellaneous	*1.80	"	—
Roofing Rags—			
No. 1	*1.50	"	—
No. 2	*1.45	"	—
No. 3 (bagging)	*1.35	"	—
No. 4	*1.35	"	—
No. 5A	*1.35	"	—

*OPA Maximum Prices.

Foreign Rags

All prices nominal

New Rags

New Dark Cuttings	2.25	@	2.40
New Mixed Cuttings	2.00	"	2.20
New Light Silesias	5.50	"	5.75
Light Flannelettes	5.50	"	5.75
New White Cuttings	7.00	"	7.50
New Light Oxfords	4.00	"	4.50
New Light Prints	3.00	"	3.25

Old Rags

No. 1 White Linens	7.50	"	8.50
No. 2 White Linens	6.50	"	7.50
No. 3 White Linens	4.50	"	—

No. 4 White Linens.	2.25	@	3.25
No. 1 White Cotton.	4.25	"	4.75
No. 2 White Cotton.	3.25	"	3.75
No. 3 White Cotton.	2.50	"	3.00
No. 4 White Cotton.	1.90	"	2.20
Extra Light Prints..	2.00	"	2.40
Ord. Light Prints...	1.75	"	2.15
Med. Light Prints...	1.55	"	1.95
Dutch Blue Cottons.	2.25	"	2.50
French Blue Linens.	3.00	"	—
Checks and Blues...	2.00	"	—
Linsey Garments....	1.90	"	2.00
Dark Cottons.....	1.50	"	1.60
Old Shopperies.....	1.30	"	1.45
New Shopperies.....	1.45	"	1.50
French Blues.....	2.25	"	2.50

Old Rope and Bagging
(Prices to Mill, f. o. b. N. Y.)

Gunny No. 1—			
Foreign	Nominal		
Domestic	4.00	@	4.25
Wool Tares, light..	4.25	"	4.50
Wool Tares heavy..	4.50	"	4.75
Bright Bagging.....	3.50	"	3.75
Manila Rope			
Foreign	6.50	"	6.75
Domestic	6.50	"	6.75
Jute Threads.....	4.00	"	4.25
Sisal Strings.....	2.75	"	3.00
Mixed Strings.....	1.10	"	1.20

Old Waste Papers
(F. o. b. New York)
OPA Maximum Prices

No. 1 Hard White Envelope Cuts, one cut	3.37½	@	—
No. 1 Hard White Envelope Cuts....	3.12½	"	—
No. 1 Hard White Shavings, unruled.	2.87½	"	—
No. 1 Hard White Shavings, ruled...	2.50	"	—
Soft White Shavings, one cut.....	2.87½	"	—
No. 1 Soft White Shavings	2.50	"	—
Soft White Shavings, Misc.	2.15	"	—
No. 1 Fly Leaf Shavings	1.67½	"	—
No. 2 Fly Leaf Shavings	1.12½	"	—
No. 1 Groundwood Fly Leaf Shavings	1.25	"	—
No. 2 Mixed Groundwood Fly Leaf Shavings	.90	"	—
Mixed Colored Shavings	.75	"	—
Mixed Groundwood Colored Shavings..	.90	"	—
Overissue Magazines	1.67½	"	—
No. 1 Heavy Books & Magazines.....	1.57	"	—
Mixed Books.....	1.07½	"	—
No. 1 White Ledger	2.17½	"	—
No. 2 Mixed Ledger, colored	1.87½	"	—
New Manila Envelope Cuttings, one cut..	2.87½	"	—
New Manila Envelope Cuttings	2.65	"	—
Extra Manilas.....	1.85	"	—
Mixed Kraft, Env. & Bag Cuttings	2.75	"	—
Kraft Envelope Cuttings	3.25	"	—
Triple Sorted, No. 1 Brown Soft Kraft.	2.50	"	—
New 100% Kraft Corrugated Cuttings..	2.25	"	—
No. 1 Assorted Old Kraft	1.75	"	—
Old Kraft Corrugated Containers	1.35	"	—
Jute Corrugated Cuttings	.90	"	—
Old Corrugated Containers	.82½	"	—
Box Board Cuttings.	.72½	"	—
White Blank News.	1.65	"	—
Overissue News.....	.85	"	—
No. 1 Baled News..	.75	"	—
No. 1 Mixed Paper.	.70	"	—

Twines
(F. o. b. Mill)
(Soft Fiber)

Coarse Polished—			
India	.21	@	—
White Hemp.....	.21	"	—
Fine Polished—			
Fine India.....	.26	"	—
Unpolished—			
Box	.17¾	"	—
Paper Makers.....	.17	"	—
Tube Rope.....	.19	"	—
Wall Paper.....	.20½	"	—
Wrapping	.23	"	—
Soft Fiber Rope...	.19	"	—
Cotton	.25	"	—
(Hard Fiber)			
Medium Java.....	.18	"	—
Mex. Sisal.....	.16	"	—
Manila	.26	"	—

PHILADELPHIA

Domestic Rags (New)
(Price to Mill, f. o. b. Phila.)

Shirt Cuttings—			
New White No. 1.	.07¼	@	.07½
New White No. 2.	.04½	"	.05
Light Silesias.....	.04¾	"	.04¾
Silesias, No. 1....	.04	"	.04¼
Black Silesias, soft	.03¾	"	.04
New Unbleached..	.07¼	"	.07½
Washable Prints...	.03¾	"	.03½
Washable No. 1..	.02	"	.02¼
Blue Overall.....	.04½	"	.05½
Cottons—According to grades—			
Washable shredding	—	"	.01¾
Fancy Percales....	.03¼	"	.03½
New Black Soft...	.02¾	"	.03
New Dark Seconds	1.75	"	2.00
Khaki Cuttings—			
No. 1 O. D.....	.03	"	.03¼
No. 2 Mixed.....	.02¼	"	.02½
Corduroy	.01¾	"	.02¼
New Canvas.....	.04¾	"	.05¼
New Black Mixed.	—	"	.02½

Domestic Rags (Old)

White No. 1 — Repacked	3.80	"	—
White No. 2 — Repacked	2.90	"	—
Miscellaneous No. 1.	3.20	"	—
Miscellaneous No. 2.	2.65	"	—
Thirds and Blues—			
Miscellaneous	1.80	"	—
Repacked	2.20	"	—
Black Stockings—			
(Export)	Nominal		
Roofing Stock—			
Foreign No. 1.....	Nominal		
Domestic No. 1...	1.55	"	—
Domestic No. 2...	1.45	"	—
Roofing Bagging..	1.35	"	—

Bagging
(F. o. b. Phila.)

Gunny, No. 1—			
Foreign	Nominal		
Domestic	3.00	"	3.50
Manila Rope.....	5.00	"	5.50
Sisal Rope.....	3.75	"	—
Mixed Rope.....	.75	"	1.00
Scrap—			
No. 1.....	3.25	"	3.50
No. 2.....	1.75	"	1.80
Wool Tares, heavy...	4.00	"	4.25
No. 1 New Light Burlap	3.00	"	4.00
New Burlap Cuttings	3.75	"	4.00

Old Papers
(F. o. b. Phila.)
OPA Maximum Prices

No. 1 Hard White Envelope Cuts, one cut	3.37½	"	—
No. 1 Hard White Shavings, unruled.	2.87½	"	—
Soft White Shavings, one cut.....	2.87½	"	—
White Blank News..	1.65	"	—
Soft White Shavings, Misc.	2.15	"	—
No. 1 White Ledger.	2.17½	"	—
No. 2 Ledger, colored	1.87½	"	—
No. 1 Heavy Books & Magazines.....	1.57	"	—
Overissue Magazines	1.67½	"	—
New Manila Envelope Cuttings	2.65	"	—
No. 1 Assorted Old Kraft	1.75	"	—
No. 1 Mixed Paper.	.70	"	—
Box Board Cuttings.	.72½	"	—
Jute Corrugated Cuttings	.90	"	—
Overissue News.....	.85	"	—
No. 1 Baled News...	.75	"	—

BOSTON

Old Papers
(F. o. b. Boston)
OPA Maximum Prices

No. 1 Hard White Shavings, unruled.	2.87½	"	—
No. 1 Hard White Shavings, unruled.	2.87½	"	—
No. 1 Hard White Shavings, ruled...	2.50	"	—
Soft White Shavings, Misc.	2.15	"	—
No. 1 Fly Leaf Shavings	1.67½	"	—
No. 2 Fly Leaf Shavings	1.12½	"	—
No. 1 Groundwood Fly Leaf Shavings	1.25	"	—
No. 2 Groundwood Fly Leaf Shavings	.90	"	—
Mixed Colored Shavings	.75	"	—
New Manila Envelope Cuts, one cut.....	2.87½	"	—
Hard White Envelope Cuts, one cut.....	3.37½	"	—
Triple Sorted No. 1 Brown Soft Kraft.	2.50	"	—
Mixed Kraft Env. & Bag Cuttings.....	2.75	"	—
Kraft Envelope Cuttings	3.25	"	—
No. 1 Heavy Books & Magazines.....	1.57	"	—
New Manila Envelope Cuts, one cut.....	2.87½	"	—
New Manila Envelope Cuttings	2.65	"	—
White Blank News..	1.65	"	—
No. 1 Assorted Old Kraft	1.75	"	—
No. 1 Mixed Paper.	.70	"	—
Overissue News.....	.85	"	—
Box Board Cuttings.	.72½	"	—
Old Kraft Corrugated Containers	1.35	"	—
Old Corrugated Containers	.82½	"	—
Jute Corrugated Cuttings	.90	"	—

Bagging
(F. o. b. Boston)

Gunny Bagging—			
Foreign	(nominal)		
Domestic	4.00	@	4.25
Sisal Rope.....	4.00	"	4.25
Mixed Rope.....	1.00	"	1.25
Transmission Rope—			
Foreign	(nominal)		
Domestic	3.25	"	3.50
Soft Jute Rope.....	5.25	"	5.50
Manila Rope—			
Foreign	(nominal)		
Domestic	6.50	@	6.75
Jute Carpet Threads.	3.25	"	3.50
Bleachery Burlap....	7.00	"	7.75
Scrap Burlap—			
Foreign	(nominal)		
Domestic	4.00	"	4.25
Scrap Sisal.....	3.25	"	3.75
Scrap Sisal for Shredding	4.00	"	4.25
Wool Tares—			
Foreign	(nominal)		
Domestic	5.00	"	5.50
Aust. Wool Pouches.	5.25	"	5.50
New Burlap Cuttings	4.00	"	4.50
Heavy Baling Bagging	4.75	"	5.25
Paper Mill Bagging..	2.75	"	3.00
No. 2 Bagging.....	1.35	"	—

Domestic Rags (New)
(F. o. b. Boston)

Shirt Cuttings—			
New Light Prints.	.04½	@	.04¾
Fancy Percales....	.04¼	"	.05
New White No. 1.	.07¾	"	.08
New Light Flannelettes	.06	"	.06¼
Canton Flannel, Bleached	.08¼	"	.08¾
Underwear Cutters, Bleached	.08¼	"	.08½
Silesias No. 1.....	.04½	"	.05
New Black Silesias..	.04½	"	.04¾
Red Cotton Cuttings	.03½	"	.04
Soft Unbleached....	.08½	"	.08¾
Blue Cheviots....	.04¾	"	.05
Fancy	.01¾	"	.02
Washable	.01¾	"	—
Cottons—According to Grades—			
Blue Overalls.....	.06	"	.06¼
New Black, Soft..	.03¾	"	.04
Khaki Cuttings.....	.02¼	"	.02¾
O. D. Khaki.....	.02½	"	.03¼
Corduroy	.02	"	.03¼
New Canvas.....	.05½	"	—
B. V. D. Cuttings...	.07¾	"	.08

Domestic Rags (Old)
(F. o. b. Boston)

White No. 1—			
Repacked	3.80	@	—*
Miscellaneous	3.20	"	—*
White No. 2—			
Miscellaneous	2.65	"	—*
Twos and Blues, Repacked	2.20	"	—*
Old Blue Overalls...	2.25	"	2.50
Thirds and Blues, Repacked	2.20	"	—*
Miscellaneous	1.80	"	—*
Black Stockings.....	3.50	"	4.00
Roofing Stock—			
No. 1.....	1.55	"	—*
No. 2.....	1.45	"	—*
No. 3.....	1.35	"	—*
No. 4.....	1.35	"	—*
No. 5, Quality A..	1.35	"	—*
Quality B..	1.20	"	—*
Quality C..	.95	"	—*

* OPA Maximum Prices.

Foreign Rags
(F. o. b. Boston)

Canvas	(nominal)
Dark Cottons.....	(nominal)
Dutch Blues.....	(nominal)
New Checks and Blues	(nominal)
Old Fustians.....	(nominal)
Old Linsey Garments.	(nominal)
New Silesias.....	(nominal)

CHICAGO

Waste Paper
(F. o. b. Chicago)
OPA Maximum Prices.

Shavings—			
No. 1 Hard White Envelope Cuts, one cut	3.37½	"	—
No. 1 Hard White Shavings, unruled.	2.87½	"	—
No. 1 Soft White Shavings	2.50	"	—
No. 1 White Ledger	2.17½	"	—
No. 1 Heavy Books & Magazines.....	1.57	"	—
White Blank News..	1.65	"	—
Mixed Kraft Env. & Bag Cuttings..	2.75	"	—
No. 1 Assorted Old Kraft	1.75	"	—
Overissue News.....	.85	"	—
No. 1 Baled News..	.75	"	—
No. 1 Mixed Paper..	.70	"	—
No. 1 Roofing Rags..	1.50	"	—
No. 2 Roofing Rags..	1.45	"	—

Powell River Installs Elevator

[FROM OUR REGULAR CORRESPONDENT]

VANCOUVER, B. C., January 5, 1942—Installation of a new electric passenger elevator has now been completed at the plant of the Powell River Company at Powell River, B. C. The elevator carries employees from the millwright cage floor up to the beater and old machine room entrances. The elevator was installed by Otis-Fensom Company and is equipped with the latest modern devices for safety and for mill passenger utility. The installation replaces the old inclined moving stairway which formerly transported mill crews from the lower to the top levels of plant buildings and cuts the journey down from a matter of several minutes to a few seconds.